Aspects of Educational Change

IVOR MORRISH

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Preface

This text is an adaptation and expansion of a booklet by Professor A. M. Huberman, entitled *Understanding Change in Education: An Introduction*, which was published by UNESCO in 1973 in the series entitled 'Experiments and Innovations in Education'. The present writer is, therefore, particularly indebted to the International Bureau of Education of UNESCO for their permission to make use of the material in any way he might see fit. It goes without saying, of course, that he is specifically grateful to Professor Huberman for doing most of the spade work in the original booklet, and he also acknowledges the debt he owes to the many authors whose works are summarised, analysed or referred to in both Huberman's booklet and the present volume. All references are listed in the Bibliography at the end of the book by number.

The present work is concerned not only with the sort of changes that occur in education, but also with the ways in which such changes and innovations may be understood. It is an attempt to develop the material, within the limits of an introductory work, in an international, inter-cultural and comparative way. To this end reference will be made not only to the almost exclusively American literature of the UNESCO document, but also to some of the now quite considerable British material.

Those involved in education will know only too well that change is difficult and unsettling for staff and students alike, and that there tends to be a considerable time-lag between the modifications in society at large and the innovations introduced into the educational scene. Teachers and educators, by and large, are a conservative group and they are inclined to hasten slowly. There are very good reasons for this other than sheer *acedia*. They hesitate to upset the conventional and hallowed ideas concerning both educational content and method lest children feel lost and insecure, lest teaching staff lose their own way in the morass of possible curriculum change and novel experiments, and lest the more reactionary elements in our society accuse them – even as they accused Socrates and many others in the past – of undermining our social institutions and the moral foundations of youth. Today there is also the fear of the possibilities of radical revolution within our society. It may not be true that 'we have never had it so good', but we are afraid that too violent a change in society and in the education of

the young may result in their not having it at all – at least until the dust of revolution has settled.

Yet anyone who has taught for any length of time knows only too well the inner conflict and ambivalence that go on in the mind of the individual. There is the longing for something new and different. Even the most obdurate and obscurantist chalk-and-talk, note-giving purveyor of information knows that he must keep his material up-to-date, and yearns for time and opportunity to work out a total change of content. The reproduction of virtually the same matter, year in and year out, with the same marginal glosses and inserted quips, becomes stale even to the teacher himself, even if the hollow laughter of the children did not at times amply reveal its insipidity.

On the other hand, in a time of global unrest and social rupture, the teacher is currently experiencing innovation upon innovation; new ideas of team-teaching, heuristic methods, exciting projects, community schools, and curricula modified by cultural and technical change – all these leave him bemused and mystified, and he begins to long for the stability of the old and well-tried paths. Change itself seems permanent and there are no longer any stable base-lines from which to work. Moreover, the uncertainty of the teacher about his aims and objectives, about what he is supposed to be doing and why, is very easily and quickly conveyed to the children he is teaching. The awareness of purpose that seemed to pervade academic work in the past often *appears* to have been replaced by a sense of aimlessness and futility. There may, of course, be more talk of taxonomies than in the past, but taxonomies tend to become so complicated and detailed that few people have the courage seriously to embark upon them.

In this ambivalent atmosphere of the strong desire to go along with what is happening in society at large and the equally strong desire to stem the tide of 'permissiveness' and decay, teachers often find themselves in the position of opposing now the institution, now the pupil. So that change in education is related very strongly to attitudes, emotions, motives and so forth. These will be looked at more closely in the body of this work.

It should be noted also that innovation in education has always been suspect. There really is nothing novel in the appearance of 'progressivism' or 'radicalism' – they have always been with us, as any perusal of the work of great educators will reveal. But this is an era of innovation, whether one is thinking in terms of the kitchen, the theatre, medicine or outer space. We are all touched by it in everything we do. Innovation in education has been regarded as something rather different mainly because education has been seen as a continuing human relationship between a teacher and a classroom of children – usually a some-

what unmanageable number too. Once modify that basic concept and a whole new world of possibilities begins to emerge, from changes in the institution of the school to innovations in the content and methods of learning.

The mechanism of innovation is not something just to be accepted; it requires analysing and understanding. The writer believes that the understanding of the mechanism of innovation considerably assists the teacher to resolve the ambivalence from which he is likely to continue to suffer in a rapidly developing and changing society. A number of models of such mechanism will be discussed in the ensuing chapters, as well as instruments for analysing the innovation process and some of the problems involved in evaluation.

Innovation, as distinct from mere change, involves the element of deliberate planning or intention, and it must, therefore, be understood in terms of human relationships. If we ignore completely the element of human behaviour our change will be irrelevant to the vital educational problems. In the discussion of the mechanism of innovation it will be noted that the three main models elicited involve very much the whole question of human relationships, whether the model be (a) research and development, (b) social interaction, or (c) problem-solving. These models do not, of course, mean that all examples of innovation are clear-cut and definable in this way; many combine elements of two or even three models. But such models are valuable for the purpose of analysis and evaluation. It is equally true that some examples defy any sort of categorisation, and that serendipity takes a hand in much of our change: it was never planned in any really systematic way, it just happened.

Finally, I ought to say in conclusion that, despite the fact that this work is based mainly upon the researches of Professor Huberman, and that much of his basic material has been retained, I alone am responsible for its final presentation and any views that may be expressed therein.

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Chapter 1

Introduction

The view that has generally been adopted in the past is that there is something almost virtuous about changelessness, as distinct from stability. Indeed, by some sort of theological analogy, it all but has the divine sanction – 'I, the Lord God, change not.' There is an assumption that we humans ought to imitate this divine, changeless quality. But the fact is that, in contemporary society, the 'unchanging' has lost much of its currency. A society, or even an individual, that is the 'same yesterday, today and for ever', does not necessarily command our respect, admiration or allegiance. We are not any longer foolish enough to think (even if we ever did) that whatever we do represents progress; but we still believe in movement, in the dynamic process of life, in change. Things never just stay as they are, they change whether they improve or decay.

Change, however, does not necessarily involve instability, and provided change is gradual and innovations are steadily tested and absorbed, the stability of society and of its institutions is not seriously affected. If, on the other hand, the institutions themselves are attacked and are the subject of sudden innovational change, then instability can quickly result. If, for example, we really *did*, with a wave of the hand, change all schools into street schools, or if we were to 'deschool' the whole of society, or to make heurism the basis of all learning, or to run all existing comprehensive schools on the model of Summerhill, we might reasonably expect instability and even chaos in our society. The success of many such ideas and ventures depends very much on the fact that they are limited experiments, applying to specific areas or particular groups or cultures, or to selected children who have peculiar problems. Such experiments do, however, provide elements for change even in the larger conventional pattern so long as they are adequately tested, assessed and evaluated.

There is, thus, something very positive about change. A study of man's development and history reveals that change is essential to his expansion and greater adaptation to life and his environment. But however novel the innovations offered to man may be, he finds it essential to assimilate them, and to accommodate older forms and structures to them, in a gradual and steady manner. Man rarely starts completely

afresh; revolution is too expensive of life, happiness and stability in the short run, whatever it may afford in the long run. Most of us are Fabians at heart; we cannot bear very much stark change – we like it in small, accumulative doses. And the social, as well as psychological, processes of assimilation and accommodation afford a slow and natural means of absorbing educational change.

It was the view of Herbert Spencer that the steady progress towards improved schooling was inevitable whether there was conscious planning towards that end or not. This 'linear theory', however, is not really something that can be demonstrated in practice since there always has been some educator or other who consciously applied his thinking to educational problems, and to schooling in particular; and his ideas were almost inevitably adopted somewhere and they influenced the development of schooling generally. Without, however, attempting to prejudge issues at this stage it is clear that, in an investigation and analysis of change in relation to education, we must look at and understand social change itself, discuss why certain types of modification prove to be more effective than others, why some changes and innovations have rapid dissemination and application whilst others spread slowly, why certain strategies for changing institutions succeed or fail, and what is the nature of resistance to change in human affairs.

Chapters 2 to 11 will be concerned with the nature of change, where it originates, how it develops, who are involved and in what precise context, where it occurs and why it has appeared to occur so infrequently in the past. Chapters 12 to 19 will examine the factors which determine whether, and in what form, changes can be introduced; the main characteristics in the nature of the innovators, in innovative systems, and in the personalities of resisters to innovation; the various ways in which change is and may be planned; and finally some current innovations and some of the problems involved in their evaluation. These problems will be investigated in terms of the *target public*, that is, the adopters in an institutional context such as the school, and of the *change agents*, that is, those who are mainly responsible for doing the changing.

This is clearly a vast subject and the present book is little more than a brief introduction to it. But it is virtually impossible to devise blueprints for laws for the description of how changes in education come about, or how they might be controlled, delayed or accelerated. We need, however, to look far more closely at the nature of change and the way it occurs in different cultural and political systems if we are to improve our understanding of the process. This implies a fuller study of other societies and their development as well as an intelligent concern for the discipline of comparative education.

There are, however, some general principles that need to be looked at and pursued in order to elicit such understanding (67, pp. 2–3). We need, firstly, to identify and to describe *innovativeness* as it is elicited in individuals, in institutions, in systems of education, and in total societies. There is no infallible rule here, for in some schools change appears to encourage and reinforce what is already operating, whereas in others it encounters resistance of a very strong kind. And whilst, like all open systems, the school systems have a drive to maintain order and stability, they also have a counterbalancing drive to improve and to innovate. These mechanisms determine the response to innovation.

Secondly, whether or in what circumstances any particular innovation may be accepted or resisted and rejected is highly predictable. Among the main variables are, for example, the cost of the innovation, the nature of its complexity, the possibility of its divisibility into parts, the relationship between the source of change and the target public who are being helped to change, and the general congruence between the innovation and the environment.

Thirdly, the school system normally is not responsible for the evaluation of its practices in order to discover whether changes are necessary, and so most educational innovations develop from outside. It is natural, therefore, that they will receive adoption usually in a somewhat superficial manner. As Huberman comments: 'The most durable and effective innovations are those which the user has internalized; that is, which he has embraced because they satisfy his own specific needs. This implies that we should begin to use radically different methods of institutionalizing changes and using outside expertise' (67, p. 3).

Fourthly, the critical factor appears to be the adopter's concept of the changes he himself will be required to make, rather than the nature of the innovation or its potential for improving learning. It seems that innovations are rarely, if ever, installed for their intrinsic value; indeed, the immediate emphasis is upon changing *attitudes* rather than changing practices and procedures, and both teachers and administrators are asked to interact with one another and with students in a different way when an important innovation is introduced.

One thing becomes evident as we pursue our study of the process of change and that is that we need to utilise a large number of separate disciplines which have some contribution to make to the total problem. Just as education itself leans heavily upon a number of disciplines (103) (147) (164), such as philosophy, psychology, sociology and history, so any analysis of the process of change demands some understanding of the way in which change is viewed in a great variety of disciplines concerned with social change. For example: anthropology (particularly

social anthropology) makes a study of change arising from contact between cultures; sociology looks at innovations, such as co-operative activities; rural sociology is concerned with the effect of the spread of new farming practices and materials; social psychology examines the problems involved in the acceptance of change, in assimilation, accommodation and socialisation.

It should soon become obvious that no single, elaborated theory of social change has been, or can be, devised to link the multiplicity of different elements suggested by this interdisciplinary approach. As Huberman (67, p. 3) has pointed out, in education interdisciplinary groups of specialists have not so far found a 'common language, common methods of research and common perceptions' which would permit them to converge on any particular educational problem. R. G. Havelock (61, p. 1.19), in his work on the dissemination and utilisation of knowledge, discovered less than 50 items prior to 1955, but some 500 annually by 1964, a mere decade later. Items in this very extensive literature covered changes in curricula, changes in organisation, the development and expansion of new educational ideas and practices, roles, materials and a variety of new organisational groups. Havelock's 4,000 entries include a large number of quantitative studies, but there are far fewer theoretical studies and a few case histories. Nearly all Havelock's references are American, but it would be quite wrong to imagine that there is little or no non-American literature on change in education (67, p. 4), as I hope we shall see in some of our later chapters.

One of the drawbacks of American literature on innovation in education is that the language used is frequently highly technical and jargonistic, and its other drawbacks include the fact that it has a tendency to look at change as an industrial process, and as a logical and rational development from theory to practice; there is less emphasis given to types of resistance to change which are patently illogical; it tends to concentrate upon the behavioural aspects of change in roles and interpersonal relationships. In addition, there is an overemphasis upon the importance of rewards and reinforcement of new habits in effecting change, and a neglect of the importance of historical, political and social contexts in which all innovations operate.

It is also necessary to note that the socio-cultural milieu in which changes arise is of vital importance. If we look at change and at the models or strategies of change, within a limited cultural range, we shall obviously obtain only a one-sided view of change; but we shall also get a view or model of change which, whilst appropriate in America, may be quite inappropriate for the majority of countries. One of the lessons of the study of comparative education is the reinforcement of the inescapable fact that the transfer of content and methods of education

from one cultural system to another must be tackled with critical care and judgement. The successful innovation and novelty of one society may well prove disastrous in another.

SECTION ONE : SOURCES, TYPES AND PROCESSES OF INNOVATION

Chapter 2

A Working Definition of Innovation

There is something very misleading about the term 'innovation', particularly as used by the uninitiated public. To many the word appears to connote an unqualified improvement on method, matter or materials used in the past. But an innovation *per se*, whether in education or in any other sphere, is merely something introduced which is new and different. In itself, however, it may be good or bad, or neither. When we take the definition a little further and make the attempt to distinguish between innovations which are mere novelties and nothing more, and innovations which are improvements, we find ourselves involved in value-judgements based upon certain criteria. What, in fact, *does* constitute an improvement in education, in the teaching or learning process? And can we always be certain whether the cause of the improvement observed was really the innovation under analysis? Or was it merely one of the many contingent factors in the total improvement? Or, indeed, was the whole process merely coincidental and in no way causative?

There are certain general points which may be made at the outset in regard to innovations and their evaluation. Firstly, they can be assessed only in relation to the aims and objectives of any particular educational system. There can be no judgement about any innovation *in vacuo*, for a successful innovation in one system may prove to be unsuccessful if introduced into another. Certain innovations, for example, in A. S. Neill's school Summerhill (62) (111), may be proved to be highly successful there because they fit in with the general pattern of the school's aims, objectives and social milieu; but they might have no relevance or

transferability to Eton or Harrow or Highbury Comprehensive, because their educational aims are very different. At first blush this might appear to be the statement of the obvious – and perhaps it is, but the many failures in the history of education resulting from the introduction and transfer of successful innovations from one country to another, one society to another, or even one school to another, should make us aware that even 'successful' innovations are not intrinsically good but depend upon a multiplicity and variety of contextual factors and relations.

Secondly, innovations are usually concerned with increased learning, or at least with more individualised learning, with broad attempts to improve the quality of teaching and its professionalisation, and with more developed, relevant and refined curricula. In the classroom the attempt to make learning a more individual thing, and teaching less of a mass operation, has resulted, for example, in both different seating arrangements, whereby individualised learning or teaching can be facilitated, and in heuristic methods which exploit individual learning and discovery to the full. In the increased professionalisation of teachers, innovations have included the extension of the training period in this country from two years to three years or even four years (40) (96) (109); the introduction and further development of a number of disciplines in education in any consideration of its general theory (103) (164); the establishment of the Bachelor of Education degree as a first degree (101, pp. 363–71) (40, chapter 3), in the first instance for a select few but eventually, no doubt, for all members of the teaching profession other than those with a university degree in a teaching subject; and in-service courses at regular intervals for all members of the profession (40, chapter 2). Curricular changes have been so regular in recent years that it has become exceedingly difficult to allow time for full and detailed evaluation of projects. They may be good, bad, indifferent or just different and, therefore, to some teachers a welcome change and to others a perpetual nuisance.

A case study in the process of curriculum change has recently been made by M. D. Shipman *et alii* (138) which is basically an attempt to indicate the way in which a particular project was established and implemented, and to analyse the influence exerted on curriculum change by the many agents employed in education. It also very conveniently, however, takes up our third point concerning innovations, namely, that they involve a corresponding change in the activities and attitudes of school personnel; it investigates the impact of the particular project in integrated studies on the trial schools and, in turn, of the schools on the project. Changes and innovations affect people and their attitudes, not simply institutions and their methods, and in any attempt to understand innovation in education we shall inevitably find our-

selves analysing human personality and interpersonal relationships. It is clear, for example, that a conventionally-orientated teacher who likes to 'do his own thing' – unoriginal though it may be – within the carefully closed doors of his own classroom, is not going to welcome *immediately* with open arms the prospect of an integrated studies project organised on the basis of team teaching. He needs educating as much as his pupils; he also needs convincing that such a change or innovation really is worth while in terms of his own concepts of the aims and objectives of education; or in the terms of M. Richland (123): 'Innovation is . . . the creative selection, organization and utilization of human and material resources in new and unique ways which will result in the attainment of a higher level of achievement for the defined goals and objectives.'

But innovation in our present context does not necessarily mean something which is entirely novel; it connotes rather something which is fresh and new from the point of view of those people using it. In his *Technology and Change*, D. A. Schon (133) holds that an act is innovative only if it adds to the sum of known inventions, otherwise it is merely a borrowing or a wider diffusion or transference of the original act.

In education, however, we are concerned less with the actual invention of new devices and methods than with their use and their dissemination throughout the schools, colleges and the many other educational institutions. Indeed, it is a fact that most of the local changes that occur are adaptations of something already in practice in some neighbouring school. We are, therefore, particularly concerned with the aspect of adoption, that is, the fact that a student, a teacher, an administrator, or even an entire school puts into practice a concept, an attitude, or a method which is qualitatively as well as quantitatively different from those which had previously been in operation. We are interested, that is to say, in the various processes whereby the new element, whatever it might be, is made available, is propagated throughout the educational system, and is finally absorbed into other practices, materials or methods in operation.

We would agree with the general distinction which M. B. Miles (88) makes between 'change' and 'innovation', namely, that innovation is clearly more planned, deliberate, routinised and willed than change, which tends to be spontaneous. In a report on innovation in education, W. Westley (158) discussed the diverting of attention from learning to a concern with technology. Regarded as a process with a clear purpose, innovation brings us into the realm of social technology; it is concerned with devising the most effective combination of means to produce specifically conceived ends. Westley further shows (159) that

international seminars tend to be preoccupied with 'the management of education' and with 'strategies of change', on the principle that change in education 'can no longer be left to casual initiatives by separate groups and purposes'. Not only is such casual and uncontrolled initiative wasteful and disorganised, it can also be thoroughly disruptive of and deleterious to the educational system.

Change in education depends to a very large extent upon the process of institutionalisation which, as S. N. Eisenstadt says (44), helps to transform the general potentialities for change into historical realities. Education, generally speaking, is a conserving institution, seeking to maintain and to mediate the cultural heritage of the society. But whilst seeking to conserve, education must also try and ensure that as little 'cultural lag' as possible occurs within the society (114, pp. 200–13). This means that there must be some attempt to adjust the old culture to new conditions in order that individuals within society might keep up with technological change. Culture, however, should through the processes of education be dynamic, and it should perform a directional role. To this end education is, in a very real sense, teleological; it provides a common purpose in and for society, which must be intelligently thought out and constructed. Such teleology must carefully consider the technological advances of the particular society concerned, the ways in which these advances may be mediated as social facts to the citizens of the future, and also the way in which pupils in schools and students in colleges and universities may make use of those advances in their day-to-day work and study (106, pp. 70–6).

General change in education is, therefore, a long-term process; but it is one which requires continual thought and application in terms of ends and means, aims and techniques. It is true that certain innovations are, in Huberman's words (67, p. 6), 'one-shot operations' in order to get a particular change installed, generally accepted and operated. Deliberate changes of this nature, however, take place somewhat infrequently. There is a sound reason for this: most organisations have a preference for stability and rarely have mechanisms for change arisen from within. In addition, although education authorities do become interested in innovation, sometimes in a competitive sort of way, and they do try out experiments in order to demonstrate that they are 'with it', the majority of such experiments are continued for a short while only and are eventually dropped. There is a lot of lip-service offered to both change and innovation, and a general climate of opinion exists that one must 'keep abreast of modern developments'. In the terms of a working definition for the purposes of this book it is suggested that an innovation must not only last but also have a high rate of utilisation, and that it should resemble its intended and planned form. Thus, an innovation is

an improvement which is measurable, is the result of deliberate choice and development, is durable and unlikely to occur frequently. As a purposeful process it is likely to be related closely to the development of social technology in a substantial way, and not merely by a change of appearance effected by the adoption of current technical jargon.

General Sources of Change and Predisposing Factors

Innovation may be regarded as a positive force in education as in any other spheres of activity, despite the fact that innovation may well be looked at with suspicion by some and may be adopted somewhat over-enthusiastically and without considered judgement by others. Planning on a proper scale is certainly calculated to increase its chances of diffusion and adoption, and it is therefore important to look more closely at the sources of change, at those impulses and energies which motivate individuals and groups to innovate, and at the conditions under which innovations are more predisposed to arise and develop.

In a consideration of the general parameters of educational innovation W. Westley (158) argues that there are three processes at work. Firstly, innovations tend to occur through the accretion of a variety of changes: some quite small, such as the introduction of a new textbook; some more widespread, such as a general improvement in the professional education and training of teachers. Other changes are effected more at the level of measurement techniques, such as the improvement of testing and diagnostic methods. All such changes as these, however, are usually developed slowly, but the total effect is a continual improvement in the educational system as a whole. Secondly, there is what Westley calls the 'grass roots' theory of the development of change: the system as a whole is perpetually being infused with new ideas, and it is transforming those which it is prepared to assimilate into some newly conceived form more consonant with its own norms and practice. Thirdly, changes occur through policy decisions: a central governmental authority decides to adopt a new idea and issues the requisite regulations and instructions to bring it into effect (36) (38) (39). These three processes analysed by Westley are probably at work in most innovations that are eventually introduced.

A consideration of the sources reveals, in anthropological terms, a dichotomy between *creative* change and *deficit* change. By creative motives to innovate we mean a voluntary and self-imposed desire to alter the customary usages, to reduce as much as possible the hiatus

between the current practices of the system and the avowed objectives, to redefine problems and recognise new ones, and to invent new ways of dealing with these problems. In all these activities there are inevitably tension-producing (creative) motives and tension-reducing (deficit) motives at work. Growth, change and development would seem to be motives inherent in every type of organism: there is the need to assimilate as well as to accommodate, to absorb and to adapt; and what applies in psychological terms to the individual organism applies equally in sociological terms to groups and institutions (106, pp. 64–70). Mankind appears to have an innate need to upset its own personal, social and organisational equilibrium, to investigate and to explore, to change and improve upon current practices, to evolve new ideas and concepts, and to attempt the apparently unattainable – either because it is already out there or because we have in some way put it there. This is observable in every sphere of life, from climbing mountains to the pursuit of atomic power; and it is equally noticeable that during periods of war, and when individual or group survival is particularly being threatened, the motivation to innovate becomes very strong indeed. Man's creative genius is then stretched to its very limits and his innovative potential (even in terms of destruction) is fully exploited.

That it is not always easy to determine whether innovations are positive or negative is clear from the particular example just given. The innovation that is welcomed for survival in times of warfare – such as, for example, the development of radar and atomic fission – and that is initially employed for the maximum destruction of human life, will tend to be exploited and further developed during the ensuing period of 'peace'. There may, in fact, be virtually a basic assumption that change and innovation are good *per se*. During an OECD workshop which took place in 1969, it was clear that the participants were quite unable, at one stage, to decide what constituted the essential difference between positive and negative innovations. They eventually came to the somewhat dubious decision that 'in a changing society, the capacity to adapt rapidly and continuously to change was itself the desired quality . . . Innovation was by definition desirable and therefore people ought to want change' (159).

We seem to be faced here with the same sort of tautologous statement as that made by John Stuart Mill in his discussion of pleasure (see 103, p. 123). If 'desirable' connotes 'able to be desired', then virtually anything – including change – is 'desirable'; but that is a far cry from suggesting that because it *is* desired it, therefore, *ought* to be desired. On the other hand, if 'desirable' here connotes 'ought to be desired', then it becomes tautologous to suggest that what is, by definition, desirable ought to be desired. This *carte blanche* approach to all forms of innova-

tion and/or change would seem to eliminate altogether the need for some analysis of and discrimination in relation to the innovations adopted.

It is, of course, a fact that we all get bored at times with what we are doing. Nothing could be more true of the teaching profession in which some individuals – certainly in the past – may have been teaching virtually the same material, in precisely the same sort of way, year in and year out, for practically the whole of their teaching career. But teachers, as well as students, are becoming increasingly dissatisfied with this process, so that as a result many do in fact find change for its own sake interesting and renovating. M. A. Trow (149) has argued concerning innovation in higher education, in particular, that it derives less from a sense of the inadequacy or undesirability of the *status quo* than from sheer boredom involved in what individuals – both staff and students – have been doing. Change becomes essentially a break with habit and routine; we need, for our mental and mental-health survival, to think in ever new ways even about familiar facts and subjects, and to reconsider and re-evaluate all the old assumptions upon which we have made our former judgements. This may not lead to any vital changes in our ultimate conclusions and opinions, but it represents functional change, change in operation, change in both method and approach.

Such change is, in fact, effected for its own sake, for the purpose of freshness, for the elimination of boredom and repetitiveness, for indeed the production of new tensions in order to keep mentally alert. If, out of this form of change, innovations of a permanent nature arise, and objectives become profitably modified, this fact might be regarded as something in the nature of a bonus.

Such changes, or such motives to change, represent 'creative change'; 'deficit' motives to change would be occasioned by competition, and any form of crisis or conflict. Examples of these categories are strikes of students or teachers; the dissatisfaction of parents, advisers, inspectors, or some other officials in educational organisations; internal disagreements and conflicts between practising teachers and administrators; recession in expenditure on school, college and university amenities and facilities, on equipment or even on teacher and lecturer supply; and the more recently conceived 'educational emergencies' in which such elements in education as high-school science in America have been thoroughly reformed after the launching of the first Soviet space satellite. This sort of motive for change must not be confused with the more parochial (but positive and creative) motive for change in which innovations are deliberately made in the educational process in order to reduce the cultural lag existing between educational practice and the stage of technological development in the current social milieu.

But here again it may well be that such a view of 'creative' and 'deficit' change is itself becoming increasingly parochial. The social milieu is becoming more and more the world at large rather than the immediate geographical locality. Technology is no longer the isolated prerogative of one advanced society – it belongs to all societies that wish to develop, and from whatever motive. War itself has resulted in 'educational emergencies' in the training of technical units and individuals, and in the subsequent development and acceleration of the curriculum process. The 'cold war', in a very real sense, presents the same sort of position, and results similarly in competition in the educative realm. This ceases to be simply an 'educational emergency', but becomes rather the updating of the national technology in and through the educational process, not merely to participate in the 'space race', but also to maintain a comparable lead in the technological realm generally.

There are a number of environmental factors which enable and predispose educational systems to change. Some are quite specific, such as size, complexity, finances and congruence between the innovations and the values and practices of those who receive them; and others are of a more general nature. M. B. Miles (90, p. 645) speaks of the cultural *Zeitgeist*, or spirit of the times, in America which tends to create specific pressures towards change, and which may even apply sanctions for not changing. During such times as these, which are invariably periods of impending change and sometimes turbulence in the social system, a whole constellation of innovations develops, and this in turn acts as a stimulation in the development of others. The examples of such changes are many, but in more recent years the most fruitful field has been that of educational technology. Education has taken on a new look with film strips, sound films, TV programmes, closed-circuit TV, programmed learning, teaching machines, tape-recorders, project packets and language laboratories. The impact in the Third World of such innovations as the New Maths has had some strange results, with both teachers and pupils going through the motions of changing bases, etc., without having the remotest concept of why they are performing such operations, or what the ultimate use of such operations might be. Moreover, it is not always or only the denizens of the Third World who are in this position. But, of course, if one regards education as 'cultural imperialism' (25, passim) much of the so-called innovation and change may well be regarded as positively deleterious to the societies affected. And I. D. Illich (68) has further argued that the technology of today's industrial societies has very little to do with people's needs, but rather that it serves the needs of the experts, the technologists themselves. Knowledge and technology, he argues, are thoroughly mystified by the experts through technical jargon. This situation keeps the mass of the

people from comprehending relationships in society, and further separates them from technology and its control.

There are, of course, other preconditions of change such as the fact that the social institution of the school will change more rapidly, and more violently, during periods of general social change. The Soviet Union is an example of the way in which a whole society was changed by revolution, and in which the educational process was radically altered both to fit the ideology of the new society and to promote further the social and political revolution. There have been experiences of a similar nature both in Turkey, under Kemal Ataturk, and in Iran, under the personal direction of the Shah (2). There are times, too, when the public begins to express its particular concern at the quality of the education produced. This occurred after the establishment of the bipartite – never really tripartite – system of secondary education in our society whereby, through eleven-plus selection, children with apparently higher academic potential were creamed off to fill the grammar schools; whilst the greater proportion (which varied quite considerably from area to area and from authority to authority) were sent to the newly-established secondary modern schools, so glowingly described in the Ministry of Education pamphlet produced after the Second World War (95).

A similar concern has recently been displayed both by groups of educationists (32) (33) (34) and by parents at what has been regarded as a decline in the quality of educational standards largely, but not entirely, through the development of the colossus of the comprehensive school. 'Quality' in this context has been related to academic standards as well as to the more hidden curriculum of social and personal development, particularly in terms of discipline and interpersonal relationships.

Other areas of change occur in terms of financial allocations to research and development, buildings, materials, staffing and so forth. Much here will depend upon whether society is going through a period of expansion or retrenchment, inflation or deflation. The 'Geddes axe' might not adequately be termed an instrument of innovation, except with a negative connotation, but it did at least decide whether a school building was to be two or three storeys high, whether in many instances it had adequate or totally inadequate amenities for physical education, school assembly, the pursuit of practical science, dining or even a decent senior common room.

Growth invariably implies more growth. As an education system develops and produces a great variety of ramifications, so specialisms and specialists begin to spawn in every possible area of research and enquiry. This is an era in which 'the main chance' for academic advancement lies in some obscure field which has been dreamed up in order to build a new, or even private and personal, empire. In the realm

of social studies, for example, man's many aberrations and peccadilloes have provided endless material for specialist investigation, until the 'norm' no longer seems to provide much interest, whilst the anomic, the dysfunctional, and the deviant in every life-style or role offer a wonderful scope for specialist and authoritative investigation. When added together the pieces of research present a somewhat strange and dislocated view of reality – but it is, nevertheless, a 'profitable' view in many respects.

One of the most noticeable features in recent educational developments has been the establishment, as well as the importance of the acquirement, of higher academic degrees. University degrees have, of course, always been of some importance, both in professional and in social terms. But the first degree, usually the bachelor's, is becoming less important as an ever-increasing number of individuals obtain one, particularly with the development of the CNAA degrees, those of the Open University and of the Independent Universities of the future. A second degree in another subject, or (more importantly) the higher specialist or research degree, is what will henceforth, *ceteris paribus*, decide who will be put on the short list and get the plum jobs. Because the total number of graduates and higher graduates is increasing very fast, the educational 'quality' of a large number of parents and potential parents is also increasing, and their interest in their children's education becomes sharpened and activated.

In the long run, however, whether changes are made and what innovations are adopted will depend very much upon the percentage of the Gross National Product (GNP) of any particular society that is spent upon education. Whilst in purely economic terms the GNP may not be the best means of measuring educational advance, at least it is some sort of guide of comparability (106, pp. 104–5, 111). Advance and change in Third World education depend to a very large extent upon how much of its GNP a particular country is prepared to spend on its reduction of illiteracy, its promotion of at least primary education for all, and its interest in both pre-school education and higher education (105, pp. 155, 210, 222). Change both does, and does not, just happen: some of it does and is quite unaccountable in any rational terms; but a good deal of it is the direct result of the total amount of expenditure any society is prepared to put into it. Such expenditure may depend upon the sort of sacrifices the society is prepared to make in order to have a literate society, a cultured society, an industrial or technological society. It also depends very much upon whether a particular society wants to compete in a world market and in the international political scene.

Professor Huberman (67, p. 9) refers to the two factors or principles

which are at work in educational change. The first he terms the 'critical mass' factor, and the second the 'critical threshold' factor. The critical mass factor represents the amount of pressure to change which is being exerted in relation to the total size of the system. Such pressures from the environment, itself ever changing and enlarging, cause the educational system to change much more rapidly than under relatively normal operating conditions. The critical threshold factor is similar to the 'take-off' point in economic growth which is reached when a certain proportion of the national income is invested over and above the investment required to maintain the country's population at the same standard of living. This critical threshold factor, however, is not a simplistic one but is itself dependent upon a large number of relatively indeterminate factors, such as the growth of population, the effect of world prices upon staple foods, the real cost of living, the changes in the habits and life-styles of people which in turn regulate the norms of standards of living.

All these factors contribute in some way to educational change and are enabling and predisposing elements in such change. But change is in itself a variable, dependent very much upon the milieu in which it occurs; nor is it, even in our own times of rapid contact and communication, something that is easily transferable from one society to another, despite the fact that economic facilities are plentifully available. All innovations require adaptation to particular environments.

Chapter 4

Types and Degrees of Change

The main types of change that are introduced into schools may be broadly categorised as: (a) hardware, (b) software, and (c) interpersonal relations. These main categories, however, are not necessarily unrelated either in process or in effect. Any addition to school equipment, for example, such as a new type of classroom, a theatre, a swimming pool, a teaching machine, or a film projector, is bound to have some effect upon the interpersonal relations within the school. Changes within the curriculum (software), in its range or content, may certainly affect the type of hardware introduced; or may, indeed, inconspicuously or un-expectedly bring about the introduction of certain new types of hard-ware into the classroom. Changes in teaching and learning methods are involved in both hardware and software, but inevitably they have their repercussions upon human relationships. A teaching machine, or a programmed text, implies immediately a new relationship between teacher and taught. Roles and inter-role relationships are perpetually changing; the classroom door is now being opened not merely to in-spectors and the headmaster, but also to other teachers working in teams, to advisers, to parents, to visiting university and college lecturers, to researchers and to a multitude of other visitors who might be in-terested foreigners, mass media programmers, or just curious educa-tionists. The modern teacher is asked to play a great variety of novel and unaccustomed roles.

Thus, in education as in other spheres of human activity, changes in hardware involve and imply changes in roles and relationships; for, whatever means are adopted in the long run in learning, the end-product of the school system is a human quality or factor, namely, an 'educated' child. The production or fabrication of such a being in-variably involves some form of human interaction, however much sheer *things* – machines, texts and written programmes – may intervene. As R. Lippitt (79, pp. 317–23) emphasises, the processes of the introduction of innovations and the diffusion of new developments are generally entirely different in different milieux. In such areas of development as medicine, agriculture and industry innovations tend to be in the form of concrete articles, such as drugs, improved diagnostic machines,

insecticides, nutrients, computers and so forth. This is not exclusively so, however, for agriculture has seen vast changes in concepts of management, organisation and specialisation; but the real innovations here tend, on the whole, to be in terms of things.

In education, however, most changes involve a different pattern of behaviour and a different approach to groups of young learners. Children, from one generation to another, change in behavioural forms in a way that is impossible for soil or for seed; social relationships are both changing and highly unpredictable, and what may appear to be a 'good idea' in terms of educational advance may well prove to be burked by human attitudes and relationships. The New Testament parable of the Sower is certainly pertinent in the realm of learning even though technological advance may have made it largely irrelevant in terms of agriculture. When we seek to change or modify human behaviour or skills through education it is clear that the ground must first be thoroughly prepared in terms of basic attitudes. To those, whether teachers or learners, grounded in old habits of learning by rote, chalk-and-talk, and so forth, the introduction of teaching machines and written programmes may at first seem alien and impersonal. The spade-work has to be done steadily and with care, and with the right sort of selection and application.

This may be put another way in terms of 'unencumbered knowledge' and 'encumbered knowledge'. Some innovations require simply the adoption by an individual member of staff within the confines of his own classroom. If he wants to use a film-strip projector or a tape-recorder, or even to introduce a new method that excites him, he is quite unencumbered in his acceptance and application of these innovations. If, however, he envisages a project which involves the co-operation of a number of other members of staff, his freedom to innovate is limited, depending very much upon the headmaster's willingness to permit the project, the co-operation of other members of staff, and his ability to choose the very members of staff with whom he wishes to collaborate. Indeed, his innovative capacity is encumbered by a great variety of contingencies which involve, in general terms, human relationships (138). But such expressions as 'unencumbered' and 'encumbered' are clearly relative; even the teacher's new methods adopted in the sanctity of his own classroom may be resented by his staff colleagues, who may in turn unite to prevent the success of his innovation. But, once more, generally speaking things and information are more easily handled and introduced than are changes in human attitudes, practice and values. This concept is illustrated in Figure 1.

In his important study of planning for innovation, R. G. Havelock (61, chapter 10) provides exemplifications of categories relating to *how*

much change is required. Firstly, there is the change in both size and scope of the operations, in which decisions have to be made concerning the capital which is available, the capital equipment to be selected, the estimated labour to be employed, and the amount of space to be filled.
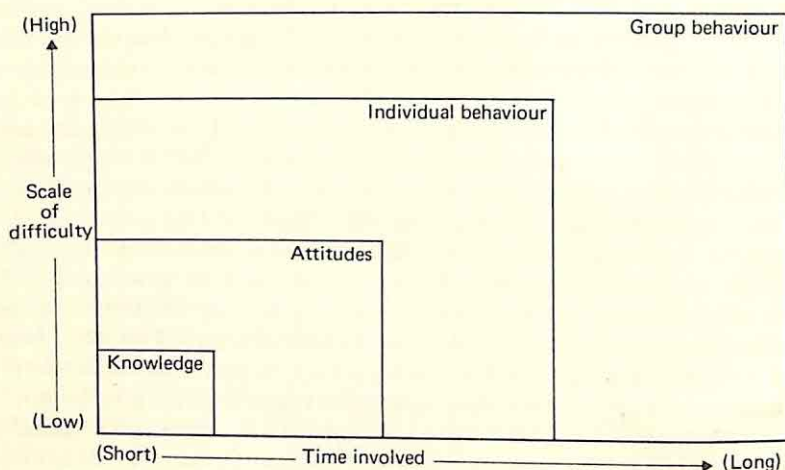

Figure 1 *Relative Time and Difficulty in Making Various Changes*

Secondly, there is the acquiring of new skills, such as through the in-service training and retraining of teachers in new curricula and new methods; in team teaching and group activity; in the use of ever-growing quantity and variety of hardware; and in the utilisation of language laboratories. Thirdly, there are changing goals. These occur when self-instructional materials are introduced and the role of the teacher is radically altered; in such situations he becomes a non-directive helper rather than an authoritative purveyor of information. Heuristic methods may be adopted in which the child is encouraged to develop ways of finding out the answers to his own problems, and of developing systems of acquiring information rather than being told. For a very balanced critique of this general approach to learning the reader is recommended to read the article by G. H. Bantock (6) on the subject. Fourthly, there are changing values and orientations. Here the long-held principles and aims of the prospective adopters are in jeopardy, and people do not easily change their highly-valued principles and practices overnight, particularly as they get older. The eradication of examinations, the modification of content and methods of religious education,

the development of comprehensive, middle or mixed schools – all these changes seriously affect all sections of the teaching profession, either positively or negatively.

R. G. Havelock (61, pp. 8.48–8.51) suggests, further, that there may be six *types of change* required for adaptation or adoption. Firstly, there is *substitution*, which is probably one of the most commonplace types of innovation. It may range from the replacement of one teacher by another to the substitution of one textbook, learning method or piece of hardware by another. New administrators may often appear to be little more than a nominal change, but they have been known to revolutionise a whole system. So that the substitution of what appears, at first blush, to be a figure-head may well prove to be the substitution of new organisations and methods.

The second category is that of *alteration*, and M. B. Miles (87) has amassed a whole compendium of case studies to exemplify the effects of this particular type of change. Here he considered alterations in existing structures rather than the introduction of entirely new elements. He gives the example of the change from the use of 16mm silent films to that of 8mm sound films – a simple change in the use of hardware, but one which requires, nevertheless, an understanding of a new technique. Another example he provides is that of the transfer of responsibilities for school guidance from existing staff members of the school to trained specialists. Just as unfamiliarity aroused resentment in the first instance, so there develops here a resentment at the introduction of a new member of staff who may now be 'paid' for what was previously done by more senior members of staff for nothing.

The third category is that of *addition* without changing old elements or patterns. Such new elements or innovations may be added without disturbing to any serious extent other parts of the existing programme. Thus, audio-visual aids are elements which become part and parcel of a lesson, or series of lessons, without in any way affecting the total curriculum. Diagnostic tests *may* do little or nothing towards changing the methods of teaching, reading or number, but as an addition to the educational processes they will certainly help to determine the problems of particular children, and in many instances to decide on which of the existing learning methods should be used, or whether the learning processes have, indeed, to be speeded up or perhaps even delayed for some reason.

The fourth category suggested by Havelock was that of *restructuring*. This may be a question of the material rearrangement of work-space, so that children might be taught in smaller groups, in streamed or setted groups, or as individuals; or merely so that they might the more easily be able to share existing equipment and general amenities. It

may involve a complete, or partial, reorganisation of the curriculum, the introduction of new (or 'modern') mathematics, or of another modern foreign language. Or it may conceivably be a thorough revision of interpersonal relations within the school by the development of an increased number of staff seminar groups to discuss and ventilate educational policy. It might involve the adoption of team-teaching methods in which members of staff are brought together for the development of projects and integrated or interdisciplinary studies. Restructuring may, of course, involve the transformation of a school from a highly streamed set-up into a non-graded type of organisation. This will certainly arouse opposition among members of staff, and may virtually split the institutional camp *ab initio*.

A fifth category may involve the *elimination of old behavioural patterns* and habits. In the past we may have tended to rely upon a single textbook ('*the* book for the subject' we blandly tell our pupils and students). We may now decide that there is no *one* satisfactory, or even near-satisfactory, text and that a dip into as many texts as conveniently possible – under some tutorial guidance – may fulfil the purposes of education far better. The typical classroom and lecture-room situation may also be eliminated, or at least considerably modified, and in its place a new structure or pattern may be set up involving seminar and tutorial groups. It has been suggested that this new pattern of group learning and discussion helps to eradicate any suspicion or hostility that might exist between teacher and taught, but that is a great over-simplification of the situation. We are learning a vast amount about the operation of interpersonal relations and group dynamics (57) (58) (76) (165); but what we have learned so far does not suggest that the operation of the group immediately eliminates mutual distrust or antagonism. Indeed, it might on the contrary increase it. What it certainly does do is to pose certain complex problems of personality integration. At the college and university level certainly, and even before, we find that the new patterns set up for learning are increasingly concerned with problems of personality therapy.

The sixth category concerned with types of change is the *reinforcing of old behaviour*. Most refresher courses of instruction for teachers are basically of this nature: teachers, like everyone else, need to be frequently refreshed as well as updated. It is not always that they are poor teachers, or that they are 'uneducated' teachers – although many of both types certainly exist. It is simply that they have not kept abreast of the most recent developments in their subject. The new knowledge may, indeed, reinforce the old, but even refresher courses can be traumatic experiences for teachers in a comfortable, or even uncomfortable, groove. In the main, however, such courses possess sufficient basic 'known'

material to reinforce what the teacher feels he already knows; that is, his old behaviour is reinforced.

In making an estimate of the difficulty, or the facility, of effecting changes the two main variables appear to be the complexity of the operation itself and the type of behaviour change demanded of the receiver. R. I. Miller (94, p. 369) has provided us with a résumé (see Figure 2) of the sort of correlation one discovers between the length of time required to implement an innovation and its complexity.

Number of participants required	*Types of Innovation*	*Length of time required to implement the idea or programme*
(many)........................	*Organisational* (ungraded, team teaching)	....
(several).............	*Instructional* (TV, new maths, programming)	....
(few)........	*Methodological* (inductive teaching, new approach to reading)	....

Figure 2   *Length and Complexity of Different Types of Innovations*

Planning Educational Change

In education the concept of actually engineering or planning change is a fairly recent phenomenon. G. Watson (157), in considering a conceptual architecture of a self-renewing school system, has demonstrated that the majority of educational innovations are introduced in a sporadic rather than in a continuous manner. There are many reasons for this, one of the chief being that few of us can, in any event, sustain continuous change. We are taken up with sudden rational or irrational enthusiasms, but the 'innovatory' aspect wears off and we again reach a steady plateau. Watson goes on to suggest that changes are effected by pressures from outside the system rather than generated from within, and that they occur for reasons of expediency rather than as a result of deliberate planning or as an expression of personal conviction. Further, changes are effected in a haphazard way – one here, one there – rather than in any organised, cumulative manner or by means of a rational and integrated design. Because of this they tend to be introduced much later than is desirable, lagging rather than leading; and they are also inclined to be superficial rather than of a basic or fundamental nature. Perhaps the most cynical, although not necessarily the least accurate, suggestion by Watson is that innovations are devised to win praise or promotion for certain individuals rather than to improve the standards of education generally. We live in an era of 'band-waggons', of the 'main chance', of novelties, projects, packages and programmes, of 'new' or 'modern' this, that or the other; and there are always individuals, groups, foundations or research departments working on some new possibility.

In the past the chief object of the educational institution was to mediate to the child the existing social system and its values, as well as its complex institutions. Some of this, of course, still lingers on in the concept of the 'socialisation' of the child, and in the idea of assisting him 'to go out into the world' (100, pp. 72–9) (134) in an informed and knowledgeable manner. But today we can no longer pretend that we are attempting to perpetuate the morals, values and forms of behaviour of the society in which the child lives. If we are planning for anything in education with regard to our society it is rather in terms of organised

technological change and of the management of the general processes whereby theoretical knowledge becomes practical knowledge. Existing social patterns and institutions are being modified with the help of industrialists who, at least, know what they want and seek to organise society along those lines. Social scientists are also examining every area of possible social investigation in order to ascertain norms, trends, possibilities, probabilities – and, in some instances, even desirabilities.

There has always existed, however, the problem of bridging the gap between university research and school practice. Very often, of course, the research theses for master's and doctor's degrees are quite irrelevant to the practical situation anyway – even within the field of education. But in those instances where it has some relevance, the pioneer work done by so many post-graduate students and scholars is relegated to the deep vaults of the university libraries. The author recollects the ecstatic delight expressed by a senior English master, with a PhD to his credit, when he discovered in a footnote one brief and passing reference to his six years of painstaking and scholarly work. It is true that detailed indexing, codified abstracts and increasing availability of theses have all helped to improve the situation considerably – although one has to admit that it is not thus organised for the increased possibilities of more immediate innovation within any sphere of education. The prime purpose of this particular exercise is to provide other higher degree students with easy reference so that they can ensure that they themselves have omitted no important piece of recent research before presenting their own thesis to swell the number.

It is true that only within the past fifty years or so have industrialists tried to design an orderly system for converting human ability and knowledge into goods or services with the object of modifying the patterns and institutions which are already in existence. In his *Technology and Change*, D. A. Schon (133) has devised a three-stage model in which he separates the least progressive from the most progressive of the industries. There is firstly the *craft* stage in which changes are made both intuitively and empirically; this is represented by such industries as those concerned with ceramics and leather production. The second stage in his model Schon calls the *mechanical ingenuity* stage, in which changes are implemented through a systematic investigation of current methods and products with the purpose of improving them; such changes occur within the car industry. The third stage he designates that of *production and quality control*. Here research in materials and processes is conducted without any certainty as to where the research will lead, but whenever promising discoveries are made they are referred to specific units concerned with developments and with the design of both processes and products. Schon places in this stage the industries con-

cerned with chemicals and electronics; he shows that these industries have been able to invade other markets, such as construction and machine tooling and textiles, as a result of their more advanced research and development.

It would clearly be interesting to determine the criteria by which the education systems of various countries could be placed in one or another of these stages. One would need, for example, a systematic examination of their teaching and learning processes; the actual amount of time spent on the total compulsory educational process; the amount of expenditure and the number of personnel involved in their research and development programmes; the importance and expansion of teacher-training and teacher-refreshment programmes; and, perhaps not least, the extent to which there is some creation of mechanisms to bridge the gaps between university research, college training and school practice, and so on.

It would be too simplistic an approach to suggest that specific countries, or types of country, fall within any one stage completely since there are so many external factors operating to manipulate the areas of particular development within any community. Huberman (67, p. 14), for example, concludes that if we were to pursue this exercise far enough 'we should probably be obliged to correlate economic development and educational development'. But this sort of correlation is bedevilled by a whole host of problems connected with the GNP, and by such intrusive factors as the World Bank, which may well be willing to invest money in the educational system of a developing country of the Third World (42, p. 70) at a particular level because this will result in quicker economic returns, but not at another level. This may well result in a poor correlation to the existing economic development of the society in question, but in a far higher correlation to what is hoped for in the not-too-distant future.

But, in perhaps rather more general terms, the best systems would probably be found to resemble the industrial process of research and development (R and D) as applied to education. This would involve the conducting of basic scientific inquiries, the investigation of education-ally-orientated problems, the collation of operational and planning data, the provision of solutions to operating problems, the devising and pro-duction of a variety of packages and programmes for educational use; and the testing and evaluation of any solutions suggested and of any programmes utilised (61, pp. 10.45–10.47). Such a model is, however, professional-centred in that it transgresses educational reality, it takes very little account of the external pressures from the environment, it envisages the schools themselves as objects to be manipulated, and it attempts to impose the technocratic values of the western world upon

the developing countries of the Third World. Moreover, we are all aware that there are certain inherent fallacies in the view that we need even more and more economic expansion and production, and that the solution to all our world problems is the wholesale transfer of technological expertise and technocracy to the smallest and most backward of the developing countries.

The fact is that there are some highly informed and sensitive, as well as economically and technologically aware, thinkers – such as Dr E. F. Schumacher (136) – who fully recognise that there are limits, on the one hand, to what man can comfortably consume or even needs to consume; and, on the other hand, there are limitations to the useful and even economical transfer of technological advances from one society to another. This applies as much in the realm of education as it does in any other sphere of life. One begins to suspect that there is almost as much of a 'built-in obsolescence' (116, p. 123) in some of the innovations engineered in education – such as projects, programmes, packages etc. – as there is in the realms of business and economics. At any rate, to 'hasten slowly' is not to delay the advance, both economically and educationally, of the developing societies; on the contrary, it is one way of ensuring that it is done in a solid and permanent way. There is, for example, nothing more pathetic and alien than certain attempts in parts of the Third World to graft novel western methods and ideas upon, not necessarily a more simple or primitive culture (even in the more acceptable senses of those words), but a *different* culture which does not have to become like or the same as ours. There is more to engineering change than the attempt simply to graft the successful innovations of one society upon another.

Three Process Models

We shall now consider briefly three process patterns which will be taken up in greater detail in Chapter 17. These are:

(1) the research and development (R and D) model;
(2) the social-interaction model; and
(3) the problem-solving model.

R. G. Havelock (61, p. 1.12) portrays the *research and development* model as in Figure 3.

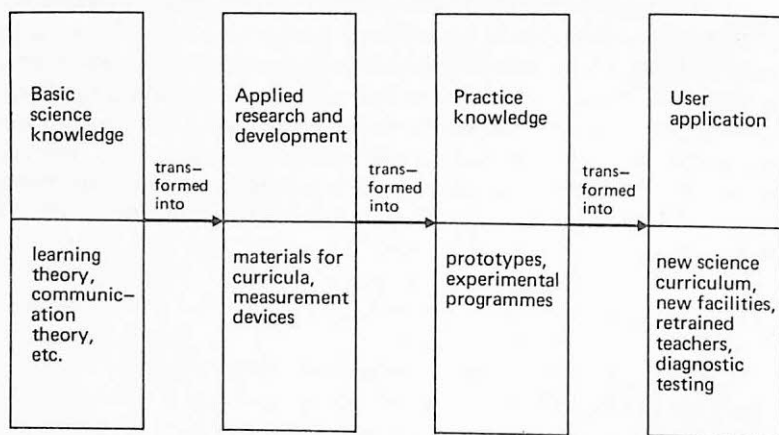| Basic science knowledge	trans— formed into	Applied research and development	trans— formed into	Practice knowledge	trans— formed into	User application
learning theory, communic— ation theory, etc.		materials for curricula, measurement devices		prototypes, experimental programmes		new science curriculum, new facilities, retrained teachers, diagnostic testing

Figure 3 *Progress from Basic Research to Application*

This is a rational and logical approach to the problem, if somewhat simplistic, since many changes and innovations do not occur as the end-product of a careful process of planning; nor, of course, does research of necessity precede many forms of innovation. In general, innovators have experimented with something and then, having tried it out, have revised and adapted it. This particular model also has something of the paternalistic approach about it, for it assumes that there

are 'experts' who are in the know as to what is best, and who in turn will impose their results upon the practitioners. They are always planning *for* and doing something *to* those who are in the field, rather than collaborating *with* them. But it would be a rationalisation of events to attempt to explain all innovations in terms of theory-into-practice; even in retrospect we can confidently say that this is not the way that things have happened since some of the most effective innovations, whether in science, technology, industry or education, have been the result of pure serendipity (22, pp. 68–78) (80, pp. 10–11).

The second model for consideration is that of *social interaction*. This follows a certain sequence whereby a new idea is pursued by one school after having carefully observed its use by another. Firstly, there is the awareness of the idea; so often not only are classrooms isolated from one another within the same school ('Old Smith always does his own thing, y'know'), but also schools are completely insulated from one another's ideas and practices – indeed, they would not deign to attempt to 'copy' anyone else's model. Secondly, there must be sufficient interest and concern to search for further information. There are clearly many good ideas on paper, in research articles, in theses and in reports which have never been pursued by others. It is true that communication channels and availability are often at fault, but it is equally true that the lack of interest shown in innovation is a part of the general lethargy so common in the teaching profession. A comfortable groove is something that requires a minimum of effort and provides a sense, however false, of security. There must then follow some evaluation of the proposed innovation, and both its merits and demerits must be fully exposed.

The 'Hawthorne' or 'halo' effect is one with which we are all fully acquainted, and we know only too well that we have a tendency to highlight those elements that we wish to highlight, and to ignore completely any elements which might easily militate against the success of a novel concept. Or, of course, it might work the other way. If we are opposed to some idea on principle, or without any principle at all, we may well neglect or oppose every single good point in the concept. But the proof of the pudding is in the eating, and any innovation can be adjusted only on the basis of trials. To try out new things sometimes requires a great deal of courage and willingness to face ridicule in failure, but the test has to be made if one is to adopt or reject it on sound and rational grounds. The innovation comes all of a piece to the receiver, and in consultation with others he will decide whether or not he will adopt it, and to what extent.

G. Watson (157) has provided a variation of this social-interaction paradigm which he entitles a 'design for continuous self-renewal'. This is an attempt to look at change in organisations as essentially the same

process as that which any individual pursues in any form of constructive thinking and in problem-analysis or problem-solving. The present writer feels that the appellation 'problem-solving' is somewhat pretentious, and he would have preferred to employ 'problem-analysis' throughout, but usage is against him. Of course, the correct process of analysis is essential for any real solution, and a proper understanding of the question will make any solution more facile; but the whole business of education is concerned not so much with solving problems as with analysing each particular situation as it arises. In this particular model, however, there is firstly a sensing of external trends and resources as well as of internal problems; this is followed by screening, a deciding whether the items merit further investigation and analysis, and a setting of priorities.

Next there comes a period of diagnosis, of analysing the internal problems or new practice; then the invention of remedies and applications follows, various approaches are weighed, and a particular innovation or idea is selected for action. The planned strategy is next introduced and operated on an experimental basis. Finally, there must be some evaluation and assessment of the results achieved, followed by some revision of the entire innovation in terms of method and content. In his 'design for continuous self-renewal' Watson's preoccupation is less with the origins and genesis of a new practice than with what is actually happening inside the institution and with what will contribute essentially to its self-renewal.

The third process model is the problem-analysis or *problem-solving* model, the solution of problems deriving ultimately as has already been suggested, from their adequate analysis. In this process there is an emphasis upon the solution of problems through internal restructuring, where the receiver is directly involved in the solutions. Frequent use is made of a temporary change agent in the form of an outside consultant, who may be acting in both an objective and a subjective manner (138, p. ix), but who at the same time sees things from inside the project, curriculum or method change, or whatever innovation is involved, as a 'participant observer'. In this particular model there is concern with attitude change, readjustment of interpersonal relations and methods of communication (138, pp. 15–42). Such a model tends to operate within Kurt Lewin's three phases (78) which he designated in his studies of group decision and social change. Firstly, he says, there is the realisation of the need for change, an *unfreezing*. This is followed by a variety of activities involved in implementing change, a period of *moving*. Finally, there must be a fixing of the new forms of behaviour and activity in the life of the group – a *freezing*.

In all this two main processes are at work. The first process is one

of re-education: it is a question of becoming aware of and correcting inefficient and dysfunctional habits and attitudes; the second is properly educative, being designed to add fresh learning, new skills, and novel practices and attitudes to a person or a group (89). In his discussion of the 'wellsprings of strategy' P. Marsh (83) views the sequences of events from within an organisation, which he suggests begins with criticism and the changes proposed, and goes on to the development and clarification of proposals and their evaluation, review and re-formulation; the comparison of proposals and any action to be taken on them; and finally the implementation of action decisions.

Thus, if we view the whole perspective of change in terms of the change agent or consultant coming into the organisation or client system, we observe the following:

(a) the development of the need for change;
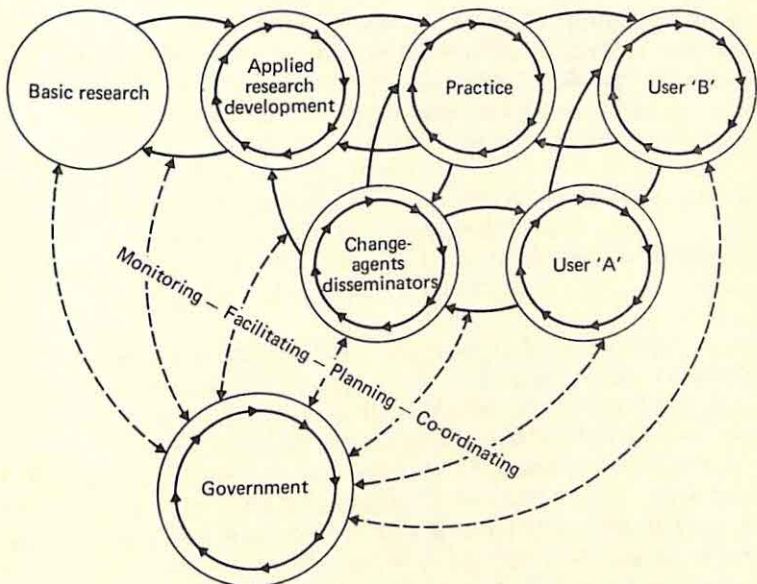(b) the establishment of a change relationship between agent and client;

Figure 4 *Interaction of Agents Involved in Change*

(c) the clarification and diagnosis of the client system's problems;
(d) the examination of alternative routes or goals and the establishment of the goals and action required;

(e) the transformation of intentions into actual change efforts;
(f) the generalisation and stabilisation of change;
(g) the achievement of a terminal relationship.

We have considered three process models, and there would seem to be no paradigm which could possibly consolidate these three processes into one. Nevertheless R. G. Havelock (61, p. 11.18) has sought to isolate the various components of each and to follow the interactions which take place between the conception of a new idea, or the invention of an artefact, and the ultimate usage of such an idea or artefact. He has illustrated it in Figure 4.

Each of the three models will be looked at more closely in an overview of models in Chapter 15, in some attempt to determine in which type of education system they occur, and to see in what way they are inter-related in the actual process of change. But it is sufficient to note at present that the model will vary according to the concern with ante-cedents (the conditions which pre-exist the introduction of the innova-tion), with the initiation and incorporation of change, and with the accurate evaluation of its effects. Different models also focus on different actors (the individual adopter, the group, the teaching staff or ad-ministration, the developers, the opinion leaders or communicators), and on the relationship between the parties concerned.

SECTION TWO: OVERVIEW OF AGENTS INVOLVED IN CHANGE

Chapter 7

Individuals, Groups, Institutions and Cultures

This chapter is concerned with the actual agents involved in change, and when the various disciplines concerned with social change are examined in some detail they reveal three main units of analysis:

(1) The individual as adopter (as in psychology, rural sociology, consumer research, and public health).
(2) The group as key parameter (as in social psychology, group psychology, sociology, and mass communications).
(3) The institution and its cultural framework (as in anthropology, social anthropology, and political science).

All of these three units of analysis are brought immediately into play in any given educational innovation of any importance. Teachers, for example, suddenly find themselves placed in new relationships to materials, to other members of staff and to pupils. In terms of a newly designed and developed project (138, p. 152) teachers may for the first time be engaged in team teaching and, moreover, with other teachers who, so far as they are concerned, lack sympathetic personalities. There may be a change too in student and teacher relations in which an authoritarian approach may be given up in favour of a more free, democratic and self-disciplined one. Relationships between teachers and administrators, or advisers, or even inspectors, change when there is an anxious desire from above to implement some innovation or to test a piece of research. But if changes are really to be thoroughgoing, parents must get involved at some point in the development of innovations;

and in this way they will take on fresh attitudes not only to the work of their children but also to the teachers involved in the process. Finally, the school as a bureaucratic organisation is modified, and this is quickly followed by its relations with external institutions with which it is involved.

There is always a sense in which education expresses itself as a sort of microcosm of the culture which it embodies and transmits, and in consequence any curricular changes, as for example in sex education or religious education, and any changes in method, such as group work or heuristic learning, will reflect modifications in the social climate and environment.

Any analysis of the process of change involves the study of a wide and complex range of variables which operate in a highly integrated system: there are individual attitudes and perceptions, group process norms, institutional and organisational structures, pressures from the community at large and from the main educational authority, and the cultural and sub-cultural codes of society. Such variables as those suggested may be generally classified as participants, structures, and roles and relationships.

INTERNAL AND EXTERNAL PARTICIPANTS

P. Marsh (83) has provided an interesting analysis of the internal and external participants as agents involved in change. The internal participants, that is those directly concerned with the socio-legal system in education, include pupils, teachers, headmasters and headmistresses, directors, inspectors and supervisors, and the various personnel of the local education authorities. The external participants, who exert a more indirect influence through the dissemination of information, by raising expectations or by invoking sanctions, include in their numbers non-educationists (such as public figures, opinion leaders, and members of parliament), foundations, research councils, academics and industry. Also to be found among the external participants are the mass media, in particular the textbook industry and the producers of other essential materials and facilities, educationists who are active in professional organisations, and certain branches of national government concerned with social affairs.

FORMAL AND INFORMAL STRUCTURES

The formal education system, involving the local school system, the inspectorate and the parliamentary department or ministry of education, is only a part of the education structure (49). Innovations have also to

take into account ancillary institutions and structures. Such institutions are formally organised systems contributing to, but not a part of, the formal system, and they include parent-teacher associations, the whole machinery for the manufacture of textbooks, school committees, mental health organisations, and so forth. Another type of structure is the autonomous group comprising individuals within the education system: these would include friendship groups and cliques, and those groups brought together – sometimes fortuitously – by the mere fact of a common hostel, a common hobby or interest, or a common sport. Finally, there are institutions composed of in-school relationships which follow prescribed norms: informal rules of conduct, status differentials among teachers and administrators, and treatment of parents.

ROLES AND RELATIONSHIPS

The school system itself involves the interaction of a considerable variety of roles and interlocking positions (106, passim). Each position, whether that of pupil, teacher, parent, aide, head, superintendent, supervisor, adviser, or inspector, requires a role performance in relation to other positions – that is, inter-role relationships. Each individual also may, and usually does, perform a number of different roles, thus providing inter-role relationships in which one role must be integrated and come to terms with another. As roles interact within the system and in response to more expansive systems – such as the state and regional, national or international educational bodies – they modify positions and relationships. For example, those lower in the hierarchy of power and prestige adapt by developing a greater conformity than those at higher levels (157). In order to gauge both the direction and the effects of change it is essential to look at some of the key relationships in the system or institution, for example: pupil–teacher; teacher–parent; teacher–teacher; teacher–head or principal; head–adviser; adviser–local education authority director; inspector–Secretary of State for Education, etc. (92). Figure 5 presents another way of looking at the interactions which take place on different levels, and the effects produced by any given innovation on the various agents.

INDIVIDUAL CHANGE

As new tools, machines and various devices are introduced into education so they immediately become *personalised*. This has been particularly noticeable in the introduction of such innovations as programmed learning, teaching machines and computers, which all at first met with quite considerable resistance. This is not to suggest that much

of the resistance was not founded upon sound reasoning and logic: it is simply that many immediate reactions were prejudiced against the innovation because it was felt that eventually the programmed text or the machine would eventually take over and completely replace the
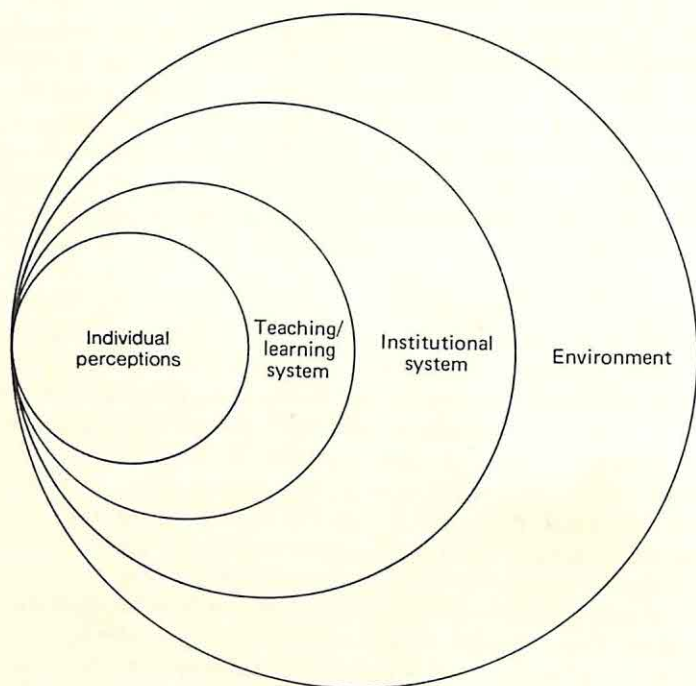

Figure 5 *Linkage in the Process of Educational Change*

person, the teacher. Such fears were, however, quite unfounded, and a critical and analytical approach to the value and usage of any particular innovation would quickly reveal its limitations and the parameters of its operation.

Most educational developments and improvements involve changes in both the knowledge and the activities of teachers, which in turn will be closely related to the way in which the individual teacher conceives his professional role and identity. Since both attitudes and values are at stake in all mechanical-structural changes in education, personal attitudes (and indeed the whole 'self-system') will inevitably come into play (106, chapter 10). The usual effect upon the adopter is high anxiety, a prolonged resistance, and the necessity for a much deeper involvement in both 'unlearning' and 'relearning' than is effected simply by giving

him written information about any new practice. The fact stands out starkly that education is as much a personal life-process for the educator as for the educatee, and that the teacher has to adapt himself perpetually to new ideas and techniques as much as those who taught. As D. A. Schon suggests (133), the United States of America, for example, is technologically but not emotionally an adaptive society; and this, of course, applies to a large number of societies in the western world. We do our best to encourage new inventions, certainly as far as is economically possible, but we do not take the necessary steps to facilitate the requisite changes in attitude and behaviour which must accompany them.

All this has practical implications for educational innovation. Firstly, we have to judge the significance of the change in terms of the meaning it is likely to have for the accepted. M. S. Atwood (4) brings out this fact clearly in his study of the guidance counsellor who was employed in order to relieve teachers of additional duties, but who was, nevertheless, viewed by the staff as a distinct threat to already existing practices. To be precise, the personality and value system of the individual teacher present a less adequate indicator of his attitude towards change and innovation than his perception of the effects of the innovation on his own personal interests and institutional goals. What really counts is his estimate of the relative importance of the personal advantages and disadvantages of each change.

Thus, it will be seen that the planning and the execution of the change process is developmental and not mechanical. It is a process in which both the innovatory and the receiving systems are altered, and in which the full implementation will require as much time as the planning, particularly when the organisation of the classroom, the teaching roles and inter-role relationships are affected by such innovations as programmed learning, interdisciplinary enquiry, group work, unstreamed classes or team teaching. It is unfortunate, if inevitable, that our knowledge of change in human organisations and systems lags far behind our understanding of physical processes.

R. Chin and K. D. Benne (27) argue that 'a considerable investment must be made in the development of people technologies' before we shall be able to deal with the human elements and aspects of planned change. Much of our discussion of people's attitudes in the face of change is based upon personal observation and subjective opinion; but we really still know very little, in precise scientific terms, about how and why individuals change their attitudes, about the behaviour of groups or about the cognitive and skill requirements for the retaining of teachers and administrators for the new types of interaction inevitably required in a school system that is learning-oriented.

Schools are in a very real sense living organisations and, accordingly, they respond to new or modified patterns of operation in much the same way as a living organism would do. Some of the current innovations already mentioned above – such as team teaching, ungraded classes, programmed learning and computer scheduling – certainly require important adjustments in the way in which school personnel react and interact, apart from changes in the duration and the regularity of their contact. L. Hilfiker (64, pp. 20–1), in his interesting study of eight school systems in America, has demonstrated that the innovativeness of a given school system is amenable to measurement by the type of interpersonal relationships and norms observed to exist in that system; for example, the headmaster as perceived by the teaching staff, the interaction among staff members, the effectiveness of professional staff meetings in solving problems and so on. Certain types of interpersonal relations and such concepts as 'openness' and 'trust', as measured in standard attitude tests (132, chapters 6 and 7), can maintain or create a psychological climate for change and innovation (3) (58).

ORGANISATIONAL AND ENVIRONMENTAL CHANGES

Whilst the teacher is a key figure in the final implementation of any innovation that has some direct bearing upon the teaching-learning process, he has far less significance in the organisational mechanism. Schools have a habit of persisting longer than teachers – in fact, only thirty yards from where I am now writing there stands a redbrick school which still bears the legend engraved upon its walls 'Board School' – a grim reminder of how little the school itself has changed during the last hundred years. Schools are generally durable and permanent structures: teachers are becoming an increasingly mobile body, seeking advancement and promotion very early in their career, and making far more horizontal changes than ever before in the history of teaching in our society. For the administrator, the inspector or government official, schools are essentially bureaucracies (108, pp. 69–72), and the teacher is considered more as a functionary than as a professional. It is a fact that, despite their apparent (if not actual) high degree of autonomy in the classroom, teachers themselves are able to implement very few innovations. Some of the difficulties which face any teacher who seeks to develop any innovation of his own are clearly outlined by A. and S. H. Nicholls in their work entitled *Creative Teaching* (112, chapter 10). As soon as any change introduced by the teacher touches on new space arrangements, instructional equipment or materials, new forms of testing or examining pupils, the old administrative machine is set in motion. Generally speaking, the teacher feels as helpless to influence or

change the larger organisational structures as would a subordinate in any other public service.

The school is closely linked to its environment (106, chapter 11), that is, to the influence of parents, neighbours, clubs and community organisations, the directives of various education departments and ministers, the mass media, university departments of education, colleges of education and other forms of teacher-training institution. The community has, to some extent at least, an in-built concept of what education ought to be; and so the school, which is a visibly dependent agency of the community – and a highly vulnerable one at that (10) – can, in consequence, make changes only so long as they do not conflict with that concept. Where a community possesses strongly authoritarian and rigid morals and standards, it is extremely difficult for non-directive teaching methods or any progressive form of sex education to take root. Instructional programmes and practices within the school relate to the process of the socialisation and training of children in the accepted mores and values of society (106, pp. 164–73), assisted by the family complex and other social institutions such as the church. When instruction is based upon the authoritative (or just authoritarian) presentation of a subject by a teacher, and upon the almost entirely passive absorption by the pupil, it becomes a process of socialisation to authoritarian relationships with adults. When, on the other hand, there is considerable encouragement to pupils to discover principles for themselves through personal observation, problem analysis, heuristic methods, and logical inference – that is, with far less guidance from the teacher – it becomes a process of socialisation to personal and intellectual autonomy (142).

Thus, the social context in which education is operating becomes of paramount importance; and it is unlikely that we shall have a more developed school system in the sense of it being child-centred, non-directive, and heuristic with highly individualised systems of learning, than the social milieu in which it is working. Innovation is discouraged in certain political, cultural and economic settings where the ideologies at work are doctrinaire applications of specific theories of progress. In some societies greater stress is placed upon education as a semi-religious activity, and any social or cultural change is unwelcomed if there is the slightest hint that the religious heritage might have to be modified. Such communities place a very high premium upon the past and its well-tried mores, but they often in consequence possess low educational attainments. Because of their somewhat obscurantist attitudes and outlook they also lack any specialised skills or training associated with current technological developments. They tend also to be insular in their view of other communities and countries, making as few cultural contacts with them as possible lest their own culture become

contaminated. On the other hand, a community with 'modern' and progressive norms will develop a technology with a complex division of labour. In consequence, it will give a higher valuation to experimentation in technical and social affairs, it will have wider contacts with other societies at both economic and cultural levels, and it will develop a system of information-exchange whereby it will be enabled to maximise its use of any scientific or technical knowledge received from other communities.

It will be seen that there is a fairly close correlation between the rate of innovation in any given community, its economic level (as measured by the GNP or by the customary list of human resource indicators) (106, pp. 104–11), and the general trend towards a more flexible form of classroom management, involving group work, team teaching and non-directive learning. Although such criteria as these may tell us little or nothing about the quality of the education system itself, or about the actual appropriateness of the innovation, they do provide a means for predicting the type and frequency of innovation for any particular country or region.

There are, however, schools of thought which definitely relate the quality of education to the type of instructional methods, and so indirectly to the economic level of a country. In his discussion of the quality of education in developing countries, C. E. Beeby (8, pp. 48–68) has developed a four-stage model for measuring the quality of primary education as it is related to the training and education of teachers, In the first stage (Dame School Stage), teaching activities are loosely organised and somewhat primitive, and they frequently involve the transmission of symbols without meaning or memorisation rituals on the part of pupils. In the second stage (Stage of Formalism), classrooms are rigidly organised; teaching methods and examinations are highly standardised and there is a frequent inspection by the authorities of the ministry of education or equivalent body. In the third stage (Stage of Transition), there is greater initiative expressed by the pupils, and far greater flexibility in both teaching method and practice. Finally, in the fourth stage (Stage of Meaning), pupil problem-solving and activity which is self-initiated become commonplace; in addition, emotional as well as cognitive development becomes an important aim, as also does the relationship between the teacher and individual students.

Chapter 8

Why Schools Change So Slowly

It is a fact, as we have noted, that education systems are more resistant to innovation than industrial or business enterprises, and that teachers are more problematic to change than (say) farmers or physicians, although, of course, all professions and trades have their more progressive and their more conservative elements. M. B. Miles (89) argues that permanent systems – whether individuals, groups or organisations and institutions – find it difficult to change themselves. He says that:

'The major portion of available energy goes to carrying out routine operations and maintenance of existing relationships within the system. Thus the fraction of energy left over for matters of diagnosis, planning, innovation, deliberate change and growth is ordinarily very small.'

There is a tendency for all institutions and organisations to achieve, maintain and return to a state of equilibrium, which is perhaps one way of preserving our identity, character, and culture.

H. Brickell (17) has argued that institutional stability ensures that the institution produces the maximum results at a given moment; any change will reduce production – certainly until new habit patterns are formed. At the present time changes are so numerous and so rapid in their occurrence that, very often, it is virtually impossible to establish new habits before the old and relatively more recent have been settled. The succession of changes in colleges of education in this country since about 1960 has left teacher-training staffs unprepared, bewildered and often inadequate. Such changes have included the expansion of the course from two to three years; the development of 'combined' and interdisciplinary courses; changes in methods; the establishment of a four-year B.Ed.; the expansion of individual colleges in numbers and courses; the reduction and restriction in the courses of others; the change in relationship with university, polytechnic, technical and other colleges;

the creation of new types of posts of responsibility; the effects of the Parliamentary enquiry, the Area Training Organisation enquiries, the James Report and consequent reorganisations; the establishment of a three-year B.Ed. and the general move towards an all-graduate profession; the taking over of a lion's share of post-graduate teacher training; the promise of expansion of secondment and of in-service and curriculum courses; and, finally, but not least, the complete change in the concept of the nature and function of the college of education as an institution of further and higher education as well as of teacher-training. Tutors and lecturers have had to try and absorb all these innovations, and many more, within a period of about fifteen years.

After this enumeration of recent changes in one particular, but very important, sphere of education, the general argument of systems theory (157), namely, that social systems are stable and homeostatic, and that after minor disturbances they return to a state of equilibrium resembling their previous state, seems almost risible. Of course, it all depends upon what one designates a 'minor disturbance', and it is clear that a continuous succession of minor disturbances results in a major disturbance. One thing is certain, in the example given above, and that is that colleges of education – whatever they may be called and whatever their function – will never be the same again. They may, it is true, develop a self-regulating character which will allow them to become increasingly malleable and competent to meet the demands of the environment, but it can no longer be argued that they will not be 'permanently disturbed', or that they will return to some tranquil state of homeostasis. However slowly the schools may change, it cannot be said that the adaptation of teacher-training itself has been slow.

Some behavioural scientists, who have applied systems theory to educational institutions, claim that schools are by nature stable or homeostatic, and are therefore unable to innovate. There are, they argue, certain genotypical and phenotypical characteristics that inhibit change. R. G. Havelock (61, chapter 6) divides these into input factors, which inhibit change from entering into the school system; output factors, which prevent the genesis of change from within; and throughput factors which limit the spread of new ideas and practices through the school system.

A. INPUT FACTORS

1 *Resistance to change from the environment*
Generally speaking, the community at large does not usually encourage or anticipate changes in the school system unless they detect or suspect some form of crisis in the internal functioning of that system. This some-

what passive or negative attitude towards change is to a large extent supported by teachers who consider that children are very tender plants that must not be subjected too strongly or too frequently to the winds of change. Experimentation, it is often suggested, is quite all right on things (or even on animals), but not on people, particularly children. And, moreover, if the projected change is not a good or successful one – whatever the connotation given to those words – then the children may have suffered 'untold harm' as a result. It is never suggested how any innovation in school can be introduced without actually experimenting in some way upon children, yet any other form of experimentation would be unreal and incapable of any viable evaluation or assessment.

2 *Incompetence of outside agents*

It is a fact that the majority of parents and community officials know very little about the process of learning or teaching, and not very much encouragement is afforded them to leave their realm of ignorance (although in more recent years official government reports, for example, the Newsom (100) and Plowden (37, chapter 4) Reports, have suggested that something very positive should be done about this). As a result, most parents and officials up to now are not really in a sufficiently knowledgeable position to be able to judge the value of any innovation that is not an outright policy matter. This may also, of course, be true of the majority of officials from the Department of Education and Science who are not themselves 'professionals' in education, with the exception of most inspectors and chief administrators.

3 *Overcentralisation*

Most systems are large and centralised, and in consequence power is concentrated in the hands of a few senior officials. This must inevitably, and somewhat drastically, slow down the rate of change, and it will also result in a filtering of all attempts at innovation through a bureaucratic rather than a professional agency. But, of course, it is becoming increasingly true that HMIs, county inspectors, and advisers, all want to promote their own novel idea or project, and so they do their best through in-service courses, refresher courses, vacation courses, and the like, to propagate as widely as possible their own particular 'thing'. It is equally true that teachers' unions, as centralised bodies, are developing their own research projects and publications and that research is gradually, albeit slowly, devolving from universities and their departments to polytechnics, colleges of technology and colleges of education. The overcentralisation of research in a few particular colleges and institutions, or in specific research units, is gradually becoming a thing of the past, and a vast number of bodies, including some supported by industry,

commerce and technology, are providing both money and facilities for research.

4 *Teacher defensiveness*

Teachers are quite typical in their resentment of any innovations which are introduced into the schools without their personal participation *ab initio*, or if the decisions are made by others than their recognised superiors. In particular, the outside 'change agent' is seen as a threat to the integrity of the system and frequently occasions withdrawal into the ritualistic use of procedures which are already existing as the norms which are socially and educationally acceptable, as well as defensible. Usually school-teachers are oversensitive to all forms of criticism. This is partly because the school system of all public institutions is the most open to view and to criticism from the entire community; and there is a consequent tendency for the teacher to seek refuge in a well-insulated classroom. The school is also one of the few public 'services' through which all individuals pass during their life, and which, in broad terms, is concerned with the normal rather than the abnormal, as for example in the probation service, the medical service or the police service. This, of course, is an over-simplification since the 'normal' here includes a great range of intelligence, ability and function as well as disability and dysfunction. But, in general, the public regard it as a normal service not as an abnormal one.

5 *Absence of change agent of 'linking-pin'*

There is no recognised agent for bringing and demonstrating new ideas, projects or practices directly to the teacher or the education administrator. In agriculture, for example, the agricultural extension worker brings information, samples and demonstrations of new seeds or novel farming practices directly to the farmer. R. G. Havelock (61, chapter 7) points out that in the American Telephone and Telegraph Company the systems engineer has the role of surveying the entire system and its components (basic and applied research, development and manufacturing service), and of relating each component to the needs and resources of other components. The pharmaceutical representative, who brings samples of new medicines and drugs to physicians, nurses and hospitals, has a somewhat similar function. In education, the publisher's agent displays his books in the schools, the colleges and the universities and does his best to recommend particular texts for particular courses. He is not so much an agent for change – since he cannot really assess the value of one book or package as over against another – as an agent for bringing the teacher into contact with some of the most recent thinking and writing upon any particular theme, subject or method. The real

change agent in education usually comes from a university or a research or similar institute; he cannot usually claim to have more than a very infrequent and somewhat superficial contact with teachers; he must first pass through an administrative filter; he is not usually invited to come to a school, and his advice is seldom held in any sort of serious regard, unless he is or has been himself at some time a school-teacher or administrator (138, p. 22).

6 *Incomplete linkage between theory and practice*

Educational research is one area of research which is still not only under-developed, but which also lacks some orderly approach to problem analysis and problem solving. There are still many universities that regard the Education Department and all its works as something very much inferior in the academic world. Moreover, there seems to be little direct way of getting research from the laboratory into the school and the classroom. Much of this research, it has to be frankly admitted, is unrelated to practical problems, and very often experimental conditions have little in common with the way in which classroom life is pursued under normal conditions. It is hardly a matter for surprise that, when researchers, administrators and teachers do not have their work linked by any institutionalised means, research and practice tend to operate in two different social systems, with few shared values or common perceptions, with different coding systems for communication and, finally, more insulated interests. Some of the best solutions to this problem would seem to be those of the James Committee (40), in terms of increasing the secondment of teachers to take higher research degrees, regular in-service and up-dating courses at colleges of education and curriculum centres, and an increasing volume of research in all institutions involved in the training of teachers.

7 *Underdeveloped scientific base*

A scientific invention undergoes a great deal of detailed testing, examination and assessment under highly sophisticated control conditions. It is not possible, however, to subject inventions and innovations in education to the same very rigorous analysis; and, therefore, they do not possess the same sort of proven validity as scientific inventions. Most learning theories are not yet fully and thoroughly developed; and in any case, many are quite incompatible with one another, or at least present an entirely different description or model of what is taking place (113). New educational practices can seldom be justified on a scientific basis before being tried out; and they are certainly not all subjected to careful and detailed evaluation. In particular, the sometimes exaggerated

claims of a number of technological innovations have not been borne out by experience.

8 *Conservatism*

The school has, in its history, always resisted pressures from outside. It has regarded itself as virtually an autonomous institution with its real 'experts' working in the practical field of the classroom. In fact, the whole business of socialisation is really a process of conservation, of preserving at least the best of the past, of mediating social values to the next generation, of assuring cultural continuity rather than of provoking cultural revolution or change. In the past, changes in the environment have become incorporated into the school and its socialising system only when they have been fully stabilised. This, of course, is becoming less true as time goes on; and because we live in an era of rapid, and often unconsidered, environmental and technological change, the school, or the individual educator within the school, becomes increasingly anxious to incorporate such changes in order the more adequately to socialise pupils. More and more the argument is that the school should socialise the child not only for his immediate society, but also for the society in which he is likely to live in the future.

9 *Professional invisibility*

Teaching has always been regarded as the basic activity of the school, with its obvious correlate, learning, and as such for ninety per cent of the time it takes place out of sight of contact and supervision by adults from outside the school (92). In consequence, it is difficult to obtain correct information as to whether in fact teaching and learning activities really are in need of a change. The actual effectiveness of teaching is not something the children themselves are usually entrusted to measure or comment upon, except in terms of examination results, and the adequacy of the teaching for the answering of certain questions. The criteria for judging teacher effectiveness usually depend upon the scale of values of particular county advisers and inspectors or some member of the central body of the Inspectorate.

B. OUTPUT FACTORS

1 *Confused goals*

Just as we have seen that certain input factors inhibit change from entering the school system so also certain output factors prevent the genesis of change from within. There are two aspects with regard to the problem of confused goals: there are the contradictory goals within the school system and the fact that different members (teachers, administrators,

parents and educators) stress one set rather than another – and thereby give support to certain changes while combating others. In relation to the first aspect, M. B. Miles (92) has put it thus:

'Since the public schools [i.e. the State schools] are supposed to bring about desirable changes in children and exist in an environment of so-called "local control" amid a host of other subsystems, all with expectations for the schools, educational goals are usually (a) vaguely staged; (b) multiple in nature, since the school is expected to do many different things to meet the wishes of its many publics; and (c) conflict-ful, in the sense that different publics may want mutually incompatible things. For example, the school is expected to cause children to "achieve" mastery of academic subject matter and to develop and maintain physical and emotional health in children and to socialize children into industrial society (e.g. make them neat, obedient, prompt, achievement-oriented). There are many circumstances under which these goals may prove mutually incompatible.'

The same sort of ambiguity and ambivalence is to be found within the school system itself. The school authorities may themselves initiate or at least support changes aimed to produce children who are imaginitive, co-operative and self-directed through a variety of types of group work, self-instruction and non-directive teaching techniques. At the same time the teaching staffs of the schools may prize obedience, regularity and self-discipline. There has always existed also a feeling that curricular changes lie outside the province of the school and are, somewhat vaguely, the responsibility of 'society', or of the parents, or of the education authorities, whether local or central.

The author can well remember the staff opposition that was aroused in one school to the introduction of an entirely revised syllabus of religious education, particularly to the appearance of the comparative study of religion and the examination of Eastern philosophy; and also the fears which were openly expressed by both staff and local ministers of religion that this was the end of the teaching of Christianity. There was, in addition, a fair amount of opposition from parents to these curricular modifications. Similarly, when social studies was first intro-duced at the same school as a liberalising influence in the sixth form, the strongest opposition came from members of staff who regarded it all as a threat to the 'more serious' arts and science subjects in which they had a vested interest. And when a fifth-form science syllabus was designed to capture the imagination of the less academically inclined, it survived at first considerable staff opposition, but eventually failed to obtain the support of parents who wanted their sons to be taught 'proper science'

with a measurable 'O' Level certificate examination at the end of it all. Parents could, and did, withdraw their children from religious education; the science staff refused to allow sixth-form pupil positions to be affected in any way by prowess in social studies; and though parents could not contract their sons out of fifth-form science they forced a rapid change of science syllabus. Goals are certainly confused, and at times there would seem to be little agreement as to their nature among teaching staff, parents and administrators.

2 *No rewards for innovating*
It has nearly always been felt in the past that both teachers and administrators are not rewarded for initiating or effectively carrying through innovations, but that they are rewarded rather for stable and dependable behaviour. Those who adopt change are paid the same as those who actively object to it or passively reject it, and they run the added risk of possible failure. It has generally been felt that promotions are usually made on the basis of seniority, personal influence, popularity or professional upgrading. In an organisation or institution that looks for a certain amount of tranquillity the man who rocks the boat is certainly not going to be loved. But times are changing, and we are entering the age of the innovators in every sphere of life. Of course, the innovators may not be the practitioners at the coal-face, but plenty of opportunity is being presented to them, in a great variety of organisations, curriculum and teachers' centres, and in some university research departments, to develop original ideas, experiment, test, evaluate and even exploit such ideas within the context of the school (138, pp. 89–93).

3 *Uniformity of approach*
The school has to deal with children with a great diversity of backgrounds – even within a so-called 'neighbourhood' school – and with a variety of aptitudes, interests, abilities and motivation. It also has a staff of teachers with a wide collocation of qualifications as well as ambitions. But despite all this considerable diversity the school seeks to install methods and modes of procedure which are applicable to the greatest number. Projects which give advantage to deprived or gifted children, to subject-centred or child-centred teachers, to bureaucratic or charismatic administrators, will inevitably be resisted by one group or another. It is odd that, in an age which lends outward support to the most novel, the changing, and the innovative, there should exist *pari passu* an almost pathological desire to make everything and everybody uniform. A 'comprehensive' view would appear to insist that all children should receive not merely the same opportunities but also precisely the same treatment through a uniformity of approach.

4 *School is a monopoly*

Apart from private and denominational schools, and those private schools in the British society which, by an odd historical quirk, are called 'public', schools do not in themselves have an economic motive nor face the same sort of competition that many organisations and institutions in our society do. Because of this, unlike business in open competition, they need to be far less concerned with the improvement of the services which they provide. If parents are, in fact, dissatisfied with the services of a particular school they may, of course, complain to their local education authority or to the governors of the school and request some change in its work or methods; or they may request that their children be sent to another school, although there is no guarantee that places will be found elsewhere. Finally, as a last resort, parents may in sheer desperation leave the district so that their children may be allocated to a different and perhaps more satisfactory school. But the original school is in no way threatened as a result. S. Reichart (121) notes that the school is in the unique position of 'having been created as a monopoly by society to do what society has mandated'. Parents and pupils are not in the position of being free to accept or reject the service of a compulsory education system, and in consequence the schools are what might be termed 'domesticated institutions', that is, their organisational environment is more stable than that of the other types of institution.

5 *Low knowledge component – low investment in R and D*

It may sound a trifle old-fashioned and *passé* to suggest that one of the chief functions of the educational institution (if not, as Huberman suggests (67, p. 29), its central task) is to disseminate knowledge. But this still remains true, despite all the contemporary emphasis upon heurism, problem-solving and so forth. Yet, despite this fact, there is very little investment in the acquisition of knowledge or its dissemination within the school itself. Generally speaking, there is a limited awareness and a little direct use of relevant areas of knowledge (such as group psychology, learning psychology, social psychology, the sociology of the school and of the community), although most of these disciplines have been examined by teachers during their various teacher-training courses. Such under-utilisation of knowledge and theory gained in training may be due in part to the fact that policy decisions are made by a board of lay persons rather than by professionals. But it is also true to say that, once their training is over, many teachers – who may never have been convinced that the theory they learned had any relevance to practice – are quite happy to forget these elements in their training, even if they don't positively assert that they were a waste of time anyway. M. B.

Miles (92) estimates that out of 30,000 school districts in the United States there are only 100 which have a built-in research function; and most of these tend to become no more than administrative data-collecting and book-keeping devices. Only about a dozen have a specifically designed unit set up to develop new practices and projects, to test them for feasibility and efficacy, and to diffuse them to other parts of the system. In our own society there is very little research carried on specifically by schools in order to increase their acquisition and dissemination of knowledge. There are, it is true, some schools which have, under the inspired leadership of individual teacher enthusiasts, developed their own units for tracking satellites, investigating fuels or examining the problems of the conservation of their environment, but these still remain very few in number.

6 *Low technological and financial investment*

When we come to examine the actual amount of technology per worker in schools we find that it is relatively low. Normally between 70 and 90 per cent of the school budget is expended upon salaries, with a fraction spent upon equipment and materials. Recently it has become clear that the amount spent on materials is quite inadequate to the needs of the children if they are to be given the opportunity for creativity and the sort of expansiveness that heuristic methods imply. Moreover, it has been observed that rises in the salaries of teachers frequently result in a proportionately less amount being spent upon classroom equipment. As a result of all this, social transactions, rather than socio-technical transactions, come to be the major working technique (91). L. Sussman argues that 'A school system which must house pupils in old, unsafe buildings, which can barely supply them with the minimum necessities in terms of textbooks, paper and chalk, which has a shortage of teachers – not to speak of specialists like testers and remedial reading staff – can hardly be expected to innovate. Even if an innovation promises to save money eventually, the process of instituting it is likely to be expensive' (142).

It was J. K. Galbraith, in *The Affluent Society* (48), who observed that market economy countries have a tendency to affluence in the private sector and to underspending in the public sector. It is true that there is always reluctance to spend more in the public sector; it has to be fully accountable, and people are never really happy about increases in taxation, for whatever purpose, and in however glowing terms the politicians may justify the expenditure. Of course, people want the best education for everybody, but there exists a complete lack of awareness of how this must be costed; they want bigger and better schools but are horrified at the estimated increase in the public expenditure and taxa-

tion to obtain them; they want great opportunities of higher education for everyone, but resent the increase in grants for 'long-haired university layabouts' – and so the ambivalence goes on.

7 *Difficulty in diagnosing weaknesses*

As an institution the school remains permanently on the defensive and it is highly sensitive towards any form of criticism from outside. Teachers have always claimed full autonomy to manage their classrooms and often resent the intrusion of virtually any 'outsider', whether headmaster, their peers, advisers or just parents. Even inspectors find that they have less of a *carte blanche* than formerly – there are teachers who want due and proper notice before they allow an inspector to enter their domain. And in some schools parents are anathema. The writer recalls one headmaster who rejected the very idea of a Parent–Teacher's Association on the grounds that 'they will be telling us what to do in the classroom next'. It is true that there was not the same objection to their provision of a cricket pavilion or a swimming-bath. Thus, the diagnosis of weakness, which is a precondition of change and innovation, is frequently retarded and burked by the school itself. It is felt that neither the school as a unit, nor its personnel as individuals, will be rewarded for admitting their weaknesses or the desirability for some change. If the inspectors insist in their report that certain things must be done, then of course they will be done, but otherwise it is safer and more comfortable to 'let sleeping dogs lie'.

8 *Product measurement problems*

In most industries and even services it is possible to devise some means for measuring the end-product; but in the educational system it is very difficult to identify and state what the product is. Many of the results of the process of education are delayed over a long span of time; and, indeed, if education is regarded as a lifelong process then the delineation of the product becomes impossible. All this makes it doubly difficult to attack the organisational defence against external criticism – in particular, against the criticism of the effectiveness of specific teaching practices. The actual aims and goals which are stated within schools – when there exists any expressed statement at all – are vague in the extreme, multiple in number, often conflicting, and emotionally laden (92). As a result, teachers are very reluctant to change their particular practices if it cannot be incontrovertibly demonstrated that one method achieves better results than another. Concern for children's welfare and personal development may lead to two very extreme positions: one, a desire at all costs to protect the child from what many regard as professional exploitation, and in consequence to coddle him; the other, a

desire at all costs to liberate the child and give him freedom from domination by others and the ability to discipline himself. And, at their extremes, these concerns lead to an authoritarian form of education on the one hand, and a free, liberal, 'progressive' form of education on the other.

Measurement can, of course, be a stimulus to change within those somewhat narrow limits where precise measurement is possible, and this has been so with two of the criteria of output measurement which have normally been used – namely, the rate of pupil retention by the schools and the society's average financial investment per child. Any other measurements in terms of examination successes and the number of pupils going on to higher education are either very subjective when finally analysed, or else they depend upon the partialling out of so many variables that it is difficult to make them meaningful.

9 *Focus on present commitments: accountability*

One of the chief problems in relation to factors which prevent change from within is the fact that very few practising teachers, and not many specialists or administrators, are able to be sufficiently detached from their day-to-day commitments and accountability to probe the weaknesses of the educational system as a whole or the school in particular, or to learn about promising innovations or experiments. In general, administrators are overburdened by immediate problems and occupations, whilst teachers are responsible for a certain number of pupils during fixed periods, and what are euphemistically termed their 'free' periods are taken up with the burdens of marking and preparing future lessons, or perhaps more often absorbed by looking after classes for absent colleagues. In consequence they have little time for any sort of research or experimentation, or for even really creative work. Very rarely at present does the teacher have the opportunity of standing back from his immediate task, and of reflecting upon new possibilities of curriculum, syllabus or method; although hopefully there is a promise of some change in relation to the continuing education of the teacher of the future (40, chapter 2) (41, p. 18).

10 *Low personnel development investment*

The focus on present commitments leads naturally to some review of the last statement made – the fact that the continuing education of the teacher has in the past been a very haphazard matter, depending almost entirely upon the individual ambition of the teacher as well as upon his economic capacity to take time off and to pursue a university course or a curriculum-centre course, more often than not away from his home ground. As a result teachers with family responsibilities, mortgage and

other commitments, have had to think very carefully about their economic security and promotion possibilities within the school in which they are already serving. Because, to date, little money has been invested by school systems on the development of personnel in terms of higher qualifications or even updating, few teachers have been able to concern themselves with new educational advances. Yet experience has demonstrated clearly that major innovations in school systems occur only as a result of personnel development efforts, most frequently with outside funds and facilities (92).

11 *Lack of entrepreneurial models*

Generally speaking, the school system is not usually the milieu in which individuals are found who sense needs, develop a series of practices suited to meet those needs, and push them through the organisation. It is a fact that most school administrators are themselves former teachers of one sort or another, and they have evolved too many personal allegiances within the system to disturb the individuals or groups who serve under them. At the same time teachers, particularly those who work in highly developed countries, are not often innovators. They seldom have the opportunity of changing or modifying any practice that extends beyond the confines of their classroom, and in fact they are not expected or committed to do so. Most school systems are essentially hierarchies in which any changes come from above, usually in a somewhat authoritarian manner; they rarely emerge at the work place. As a result, unlike most workers, teachers are very loth to suggest new working patterns for themselves; and when they are asked to imitate the methods of other teachers they frequently see the request as a reflection upon their personal efficiency and adequacy.

Usually the teacher is not an innovative character. The analysis of personality types in both European and North American countries represents teachers as both restrained and deferential, always anxious to please their bosses, lacking in social boldness and adventure, and more passive and less competitive than professionals in other jobs. This profile is less exact in regard to many developing countries, in which teachers are becoming more ambitious and competitive, less school orientated and more education orientated.

12 *Passivity*

There is still, however, a certain air of passivity and resigned acceptance about many of the teaching profession. The general feeling is that, whatever teachers may think about the possibilities of development and change, they themselves are powerless to do very much about it;

and, in any case, if you want a quiet life which is secure and stable, you don't start stirring up trouble. In the words of M. B. Miles (92):

'In many school systems, the main stance of the chief administrator in the face of system vulnerability and varying demands from the environment is a withdrawing, passive one . . . . The tacit view of the school is that it has little power to initiate, develop, grow, push things, or be disagreeable to anyone or anything.'

C. THROUGHPUT FACTORS

1 *Separation of members and units*

There is a low level of co-ordination among the different parts, members and units of the school system, which are clearly not as closely interlocking as those of industrial firms and other systems that produce and market clearly defined physical objects. Indeed, without such close interlocking and clear conception of the end-product, such firms would very quickly disappear. M. B. Miles (92) holds that a low degree of interdependence makes a system much more difficult to alter, because changes occurring in one part are not transmitted to another part and, indeed, need not be so transferred for the efficient operation of the system and the 'manufacture' of the end-product, since the latter is never closely defined. Thus, the failure or success of one teacher may have little or no impact upon the teacher in the adjoining room. In fact, one can remember the overall cynicism and scepticism with which any individual success was received at a general inspection; and the final report of the inspection caused little more than a temporary and short-lived ripple – even if it were read. As we have said, such a low level of co-ordination constricts the flow of information about new thought and practice.

Despite the existence of a number of teachers' unions as well as teachers' journals, there appears to be little intercommunication among teachers themselves that leads immediately to innovation. In this respect teaching is very different from the profession of medicine and from the farming industry. Because of the large area of consultancy, and the importance of second diagnosis and opinions, there is a great deal of intercommunication at all levels among physicians and surgeons; whilst today the general practitioner, although he certainly has a very heavy task, keeps abreast of new drugs through such publications as the Monthly Index of Medical Services, and of new treatments through the articles in *The Lancet, The British Medical Journal,* and a whole host of other medical publications. Moreover, with the increasingly efficient service of abstracts and offprints, the doctor is able to select

the more immediately relevant articles for reading. Similarly, farmers discuss and share new ideas and imitate one another through the assistance of journals and the mass media, which all provide them with the latest information on the best foodstuffs, breeding and so on.

2 *Hierarchy and differential status*

There is a higher rate of innovation among most professional organisations than amongst bureaucratic organisations, due to the stress upon expertise rather than upon position or rank, to the greater flexibility of the members, to the more precise goals and output criteria, and to high demands for production. The Burns and Stalker study of industry (21) (61, p. 6.22) revealed that several organisations were all but immobilised by their stress on the hierarchical status system and by the accompanying resistance of members to changing the structure. In particular, hierarchies discourage or distort information flow. Members will hesitate to send knowledge upwards unless

(a) it is firmly substantiated by hard data, which obviously can rarely be the case with innovations;
(b) it reflects only a favourable evaluation of themselves;
(c) it is directly relevant to the receiver (61, p. 6.23).

The school structure has a more stultifying effect upon the initiation than upon the adoption of an innovation. In an authoritarian system anyone can be ordered to adopt something new, but no one can be ordered to *create* something new. But an adoption which is forced upon a school, or even upon individual members of staff, is likely to be superficial and unstable. It will be an act of compliance rather than one of identification and internalisation.

3 *Lack of procedure and training for change*

To date teachers have had no fully institutionalised procedures for learning about the new practices of their colleagues, and there has been considerable resistance to adopting another teacher's ideas, whether in content or method. The personnel of schools have not usually enjoyed the type of human-relations training which is used in industry and commerce to stimulate awareness and to gain acceptance of new ideas and methods. In more recent years, however, there has been an increasing recognition for the need of such institutionalised procedures by the development of curriculum centres, the retraining of teachers who have been out of the service for a number of years, and the continuing updating of teachers through refresher courses and sabbatical periods of study (40) (41). Should the recommendations of the James Report

in this connection ever be fully implemented, all teachers will be compelled, at specific periods in their teaching experience, to attend centres, colleges, polytechnics or universities, in order to apprise themselves of the latest developments in teaching methods and the changes in curricula and subject matter.

D. FACTORS CONDUCIVE TO SUCCESSFUL IMPLEMENTATION OF INNOVATIONS

We have now discussed, both in general and in particular terms, some of the reasons why schools change so slowly, and some of the factors – input and throughput – which in one way or another affect change. In our consideration of these factors we have been primarily concerned with those that hinder the implementation of innovations. It might be useful at this point, however, very briefly to list some of the factors which are conducive to the successful implementation of ideas of change, and this has been done for us by A. and H. Nicholls, in their consideration of *Creative Teaching* (112, chapter 10), under the following headings:

(1) Teachers are favourably disposed towards innovation.
(2) Teachers have clear understanding of innovation.
(3) Innovation is within teachers' capabilities.
(4) Necessary resources for innovation are provided.
(5) Necessary administrative/organisational arrangements are made.
(6) Full accurate pupil diagnosis is carried out.
(7) Channels of communication are used for:
    (a) giving information
    (b) seeking co-operation
    (c) resolving fears
    (d) changing attitudes.
(8) In-service education is available where necessary in connection with factors 2, 3, 6 and 7.
(9) Adequate time is given for the development of factors 1, 2, 3, 6, 7 and 8.

Rates of Diffusion

It has been pointed out by A. Toffler (148) that in the history of man there has usually been a long gap of time between the conception of an idea and its application to engineering or science generally. He gives the examples of Appollonius of Perga who discovered the principle of conic sections some 2,000 years before it was applied in a practical way to engineering problems; it was some 500 years before medicine imitated Paracelsus by systematically using ether for an anaesthetic. In Great Britain the first patent for a typewriter was taken out in 1714, at least 150 years before it became commercially available. Of course, some inventors still feel that society drags its heels when it comes to any practical application of their ideas, and it sometimes takes a major war before some inventions are implemented. Lynn (148, p. 28) made a study of twenty major innovations, which included such things as antibiotics, frozen foods, and integrated electrical circuits. This study revealed that the average time required for a major scientific discovery to be translated into a usable or commercial form had been reduced by something like 60 per cent since the beginning of the twentieth century. The most dramatic, not to say cataclysmic, example of this was the explosion of the atomic bomb at Hiroshima six years after the very first experiments had been made with nuclear fission. It is interesting to note, however, what little progress has been made since in the conversion of nuclear energy for everyday, positive and practical use.

In educational systems, however, the rates of implementation of ideas and innovations still lag behind those of the medical, agricultural and industrial systems. M. B. Miles (90) delineates three reasons in particular for this:

(1) There is an absence in education of any body of valid scientific research findings.
(2) There is a lack of change agents in order to promote new educational ideas.
(3) Very little economic incentive exists to adopt even those ideas and innovations which have been explored, and which on the face of it appear to have some logical validity.

P. Mort (107) claims that any change in the American school system takes 'an extravagantly long time', and that it follows a fairly predictable pattern. There may be a time lapse as great as fifty years between the time in which there occurs some recognition of a need and the first introduction of a way of meeting such a need, which eventually spreads throughout the whole system. He gives by way of illustration the example of the identification of the health problems of school children, and the eventual introduction of health inspection by a school doctor. Yet another fifty years are required for the diffusion or full adaptation of such an innovation, and during this second phase it takes fifteen years for the practice to appear in 3 per cent of the systems in the country. After that there occurs a period of some twenty years of rapid diffusion, which is followed by a final fifteen years of somewhat slow dissemination through the last small percentage of schools. Similarly, a close study of reports such as the Hadow (14) (15), which today would be regarded as somewhat conservative, will reveal that methods (for example, the heuristic method (14, p. 221)) now considered as somewhat novel were already being mooted and analysed fifty or more years ago.

Mort's studies were first made in the 1930s, and there is little doubt that since then the rate of change has considerably accelerated; in fact, Mort himself estimates an increase in tempo of some twenty per cent. P. H. Coombs (31, pp. 118–19) mentions a recent American survey in which six out of the twenty-seven innovations that were investigated had been adopted in school systems throughout the country within about ten years. Mort (107) had predicted in 1953 that society could soon expect an outpouring of important new designs in education. He said that: 'These designs will spring from the combination of hundreds of innovations which have been stimulated during the present half-century by new insights into educational psychology and social change.' He agreed, in particular, that the major discovery in educational theory was made at the turn of the century, namely that the concept of 'formal disciplines' was untenable. This would lead to a long period of adjustment which would be characterised by thousands of innovations; and these, in turn, would later on in the century merge into new concepts and designs.

The adoption process, then, occurs in stages (61, p. 10.9). There is a very early stage when two or three per cent of *innovators* decide that they will introduce their new ideas. This is followed by the second stage in which the *early adopters*, who represent about five per cent, decide that they will become involved because they have observed no completely disastrous results. There then occurs a middle stage in which the *majority*, about seventy-five per cent, adopts comparatively quickly, influenced primarily by the innovators themselves. This is

followed by a late stage when the small residue of resisters or *laggards* at last succumbs. Finally there remains, lying above the curve, a small group of resisters who will never give in (see Figure 6).
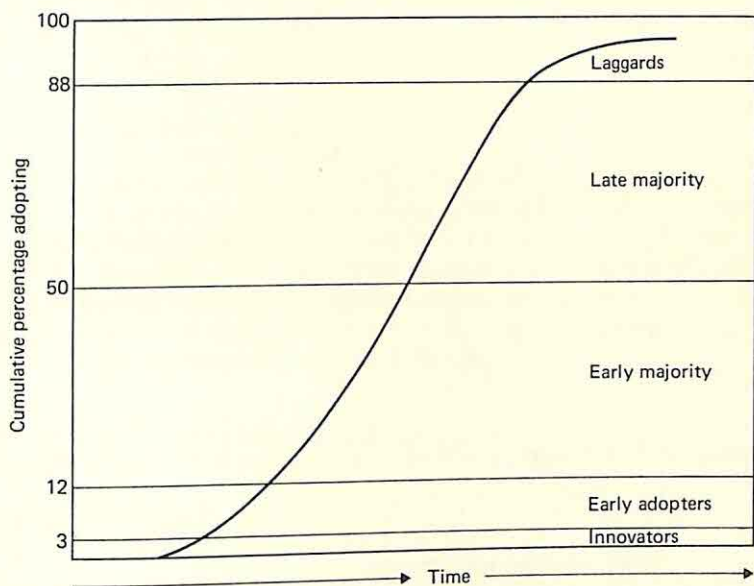
Figure 6 *Adoption as a Cumulative Curve*

R. G. Havelock (61, p. 10.6) makes the point that, when one considers the progression from awareness to integration of a single adopter, the process may be looked at as a similar S-curve of learning (see Figure 7).

In most educational change we are concerned with a group, or at least with an accumulation of adoptions by individuals. Individuals are influenced by groups, so that diffusion curves such as those in Figures 6 and 7 appear like chain reactions, with the number of adopters increasing in proportion to the number who have previously adopted (23, pp. 5ff). It should be noted at the same time, however, that the adopting system will affect each adopter differently, for

'The context in which each potential adopter lives is different; his reference groups are different, his perceptions are different, and the norms of the group are interpreted differently by each. Their adopting behaviour will, therefore, be different. Not only will their adoption periods be different, but they will also become aware of an innovation at different times' (61. p. 10.7).
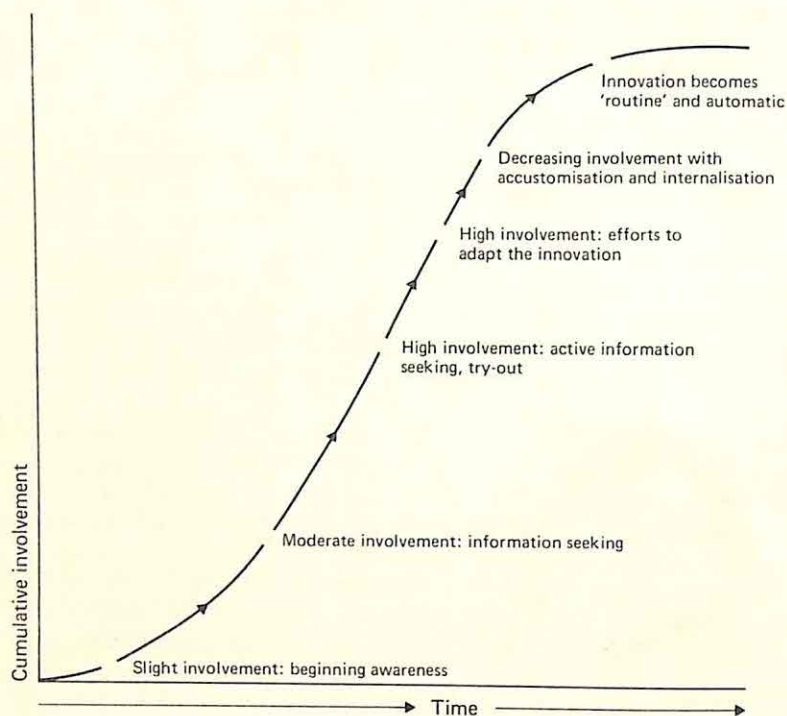
Figure 7 *Involvement of an Individual during the Adoption Process*

Chapter 10

Process Variables

There is, then, inevitably a time lag between the concept of any particular change or innovation and its adoption. So that, in order to reduce the time lag, it is necessary first to isolate the many factors which operate when any given innovation is introduced into the education or school system. Clearly our understanding of the process, models of change and of the strategies which eventually will emerge, all depend upon the interactions of factors which are:

(a) inherent in the innovation itself;
(b) situational or connected with the school system and its personnel; and
(c) environmental.

The following is an attempt, in outline at least, to provide a general checklist of such process variables.

A. INHERENT OR INTRINSIC VARIABLES

1 *The proven quality of the innovation*
The actual quality of any innovation in education is not a very easy question to deal with, nor is it very amenable to any sort of measurement. As a behavioural science – insofar as one may rate it a science at all – education is less scientifically verifiable than are, for example, the physical sciences. It is possible to list (61, pp. 8.38–8.46) such indicators as the reliability, validity, generality, internal consistency and congruence with other scientific theories. To these indicators we might add the actual utility of the innovation, and its precision and durability. But here again, durability is a very difficult thing to measure; whilst some innovations are clearly valuable in the short term only, others are meant to last almost in terms of permanent change, and it becomes very important to evaluate them in those terms. A distinction must also be made between the various parts which comprise the innovation – that is, theory, data, method and final product.

2 *Cost*

There are two main types of cost involved as variables: there are the initial costs of an innovation, which are required in order to try it out, and there are also the continuing costs, which are incurred after the adoption of the innovation, including those involved in maintenance and even further developments and improvements. Initial costs are inevitably high in terms of capital outlay, the training of personnel, changes in spatial arrangements, time and so on. Any innovation is likely to progress slowly, unless the reduction of costs themselves represents one of its chief objectives. If, however, costs can be divided into instalments of some sort, the pecuniary obstacle becomes far less serious. R. G. Havelock (61, p. 8.45) underlines the fact that continuing costs may not hinder the adoption of many innovations, since they are likely to be underrated by the adopter at the time of adoption.

3 *Divisibility*

This variable was defined by E. M. Rogers and F. F. Shoemaker (128, p. 155) as 'the degree to which an innovation may be tried on a limited basis', that is, its *trialability*. Those innovations which meet this condition and can be tried on a small scale, or for a limited period on a trial basis, are more easily diffused than those which represent an 'all-or-none' proposition. Once certain elements have been introduced, and certain materials delivered, it is very difficult indeed suddenly to discontinue them. School buildings, especially those involving special equipment, are not easily converted into something else; computer terminals are costly to install, and there will be great hesitation before removing them; and once a wholesale policy of (say) open admission, or comprehensive schooling, has been adopted it is virtually impossible to go back upon it, even if it were generally considered desirable. Such radical innovations are well-nigh irreversible. 'This principle [also] holds in industry. The probability that a firm will introduce a new technique of production is, in part, a function of the size of the investment required' (61, p. 8.40).

Divisibility also refers to the number of individuals or the proportion of a community to be involved in the adoption. For example, group consent means a slower diffusion than individual consent. G. MacKenzie's studies (81) of curricular change, divisibility and cost are linked: some changes involved the employment of new staff (e.g. the teaching of Spanish). Other changes involved the use of a national agency for retraining, as in the case of the new or modern maths content. Still others involved extensive local staff retraining, as in the case of team teaching.

4 *Complexity*

As a process variable, complexity relates to three elements in particular, namely:

(a) the number of parts of the innovation;
(b) the number of behaviours or skills to be learned or understood before adoption is possible;
(c) the number of procedures required for effective maintenance over a period of time (61, p. 8.41).

It is obvious that the more difficult it is to understand and use, the less chance an innovation stands of rapid adoption. Earlier we discussed the amount of change required (the changing of the scope and the size of operations, the acquisition of new skills, and the changing of aims and values), and the type of change (such as the reinforcement of old be-haviour, substitution, addition without altering noticeably former patterns, elimination and restructuring of old behaviour). Both the amount and the type of change can be plotted along a continuum from facility to difficulty: things are much easier to change than values, whilst innovations, which demand a shift in habits of thought and work which are thoroughly ingrained, are the most difficult to absorb. As H. Brickell comments (18, p. 294):

'For example, if the innovation absolutely requires that the progress of each child be noted every day and that a new instructional decision be made specifically for him, teachers may find this too much of a break from the mass instruction to which they are accustomed.'

5 *Communicability*

One of the most important problems to consider in the adoption of any innovation is the question of how easy or how difficult it is to explain or demonstrate the innovation. Material items find greater acceptance than ideas because their utility is the most easily demonstrable, and because things are visible whereas ideas and values are not nearly so concrete. For example, new reading materials diffuse more easily and quickly than new methods of how to learn to read. In particular, teachers want to observe new ideas, devices and techniques at work in actual classroom situations, and under reasonably normal conditions, not in the rarefied atmosphere of the experimental laboratory. In the American reform of curriculum in physics (PSSC) it was discovered that the syllabus was not widely adopted in regions in which special demonstrations and courses were held in institutes, but rather in the

actual vicinity of the demonstration classrooms where teachers in the neighbourhood could watch the programmes in action for themselves.

There are those educational technologists who maintain that new materials should be virtually self-teaching if they are to be adopted. They are, it is true, much more likely to acquire adoption if they readily fit the demands of a variety of teaching situations, and can be reproduced and distributed without any change in their original form when used by a wide variety of teachers in a range of learning situations. On the other hand, the more difficult they are to operate (that is, the more they require administrative energy and know-how), or are puzzling or threatening in a technical sense to the adopter, the more slowly and reluctantly will they be accepted (90). In some schools, however, such as those in developing countries, teachers are much more accustomed to making and improving their own materials, and they might well object to the increasingly popular 'packages' which are being showered upon us, and which cannot be modified by the teacher's own inventiveness.

B. SITUATIONAL VARIABLES

1 *Structure of the instructional system*

There are many factors in the structure of the instructional system that can be isolated, and the following are but a few: size, hierarchy, number of innovations and financial resources. With regard to size, the most difficult schools to change are the largest and the smallest, since both institutional mass and tight cohesion are extremely resistant forces.

Institutions with hierarchical structures tend to initiate change more slowly, but at the same time to *adopt* change more rapidly, however superficial this adoption may be, than institutions which are decentralised. In any hierarchical structure the key factor is the extent to which the potential accepter feels dependence upon authority. There are a number of industrial studies which demonstrate that the tenure of the chief administrator is important; the actual number of innovations seems to be inversely proportional to tenure, on the premise that the longer he is in office the less likely he is to be interested in introducing changes. Changes are usually seen as a potential threat to stability and to the position of authority.

In any implementation of change financial reserves are crucial. In general, communities which provide higher financial support tend to have schools which are more innovative, partly because of the higher levels of education and occupations of the members.

2 *Leadership and sponsorship*
It is necessary, as well as important, to specify the nature of the relationship between the person who sponsors the change and those who are being assisted to change. The power relationship is clearly a key factor, and the more powerful the sponsor, the more likely the adoption of the innovation in question by others. Another key factor is the prestige of the sponsor and of the first persons to adopt the innovation. Mass media research has concentrated on so-called 'opinion-leaders' who exert influence, for example, upon voting behaviour or adoption of new farming practices. These are individuals who are responsible for the promulgation of fresh information – that is, they are communicators; or they are more influential in persuading others to adopt new practices – that is, they are legitimators.

3 *School environment*
The institutional milieu in which a specific innovation is to be introduced is an indistinct factor and not very amenable to any sort of accurate measurement. Individual attitudes, views of the proposal as a threat or as a panacea, familiarities with changes of the same sort, can all determine whether the climate is favourable, neutral or inhibiting. Change which is occasioned by crisis is a special case of this, for crises naturally tend to loosen value systems and institutional structures and, thereby, to speed the rate of adoption or at least to weaken those forces which would tend to resist. Such changes, however, tend to be merely temporary, unless the organisation is affected long enough for new patterns to take root. It is possible, though not yet adequately demonstrated, that when institutional crises can be provoked and guided there will follow a process of growth and development, very much as in the case of an individual crisis.

4 *Group norms*
Clearly different target groups are affected differently by any proposed change, whether one is thinking in terms of teachers, pupils, parents or local administrators. It is true to say, however, that the probable reactions of these existing reference groups, clique structures and vested interests are highly predictable. In particular, group norms concerning the value placed on security and on assumption of risks must be examined in this connection.

5 *Personal characteristics of adopters*
Adopters are very similar to innovators (see Chapter 13) except that they are essentially more prone to conformity, have more deference to authority, and possess a greater sense of insecurity. When we examine

the factor of age we find that younger people have grown up in an atmosphere of mobility and change, and that not only are they used to it but often positively welcome it as lessening the tedium and boredom of a life which could be, and for many is, very repetitive. Education, whether one is thinking in terms of type or depth and extent, is positively related to innovativeness. Those who have been educated in formal institutions and in very restricted methods of learning, tend to accept the old ways and practices and to reject the novel and informal; whilst those who have been used to heuristic and project methods in their own education tend to be more innovative. Income and socio-economic status are also positively related to innovativeness; whilst other personal characteristics of adopters include the capacity to discriminate, ability to deal with abstractions, rationality, and positive attitudes towards the profession.

E. M. Rogers and F. F. Shoemaker (128, pp. 145–54) argue, however, that the key factor in the communication and adoption of innovations is compatibility, that is, the degree to which an innovation is consistent with the existing values and past experiences of the adopters. Attitudes and self-perceptions may, indeed, count for more than individual traits; and adoption rates, therefore, will depend on how closely the proposed innovation appears to fit the experience, the social and cultural values, and also the physical environment of both the individual and the group.

6 *Rewards and punishment*

The profitability of any particular innovation may be judged from the point of view of educational quality, administrative efficiency, the psychological satisfaction derived by pupils and teachers and so on. What essentially is of account here is what the potential adopter thinks he stands to gain or lose by adopting the innovation; and when actual rewards, in terms of financial gain or personal promotion, and punishments, in terms of financial loss or demotion, are involved they may also contribute to the acceptance of the innovation, at least on a short-term or trial basis. It is obvious, for example, that a member of staff will be quite happy to support a particular change in curriculum if it is likely to involve his appointment as head of the project with improved status and increased salary. If it means, however, subordination to one of his professional peers whom he may regard as rather inferior to himself anyway, an increase in his involvement in work and production but no increase in pay, and his ostensible demotion through another's promotion, his enthusiasm for the 'new-fangled idea' may not be so unqualified.

C. ENVIRONMENTAL VARIABLES

1 *Innovation system congruence*

It has become increasingly clear, certainly during the present century, that the willingness of any society to accept, adopt or support specific innovations depends very much upon its cultural and religious values. Our own society resisted for a long time any form of organised sex education, and there are still those who are not wholly in favour of it. The same process has equally occurred in any sort of open discussion on religion. When the author introduced such a discussion into the sixth form of a grammar school in the forties, he received a spate of letters from parents telling him in no uncertain terms that he had gone beyond his brief, and that they were in any case withdrawing their children from religious education. The social climate was one of return to the dogmas of Christian belief in the very narrow sense, and anything beyond that – particularly discussions of other religious and ethical standards – was regarded by many as dangerous and antisocial. The same attitude applied in some schools at that time to attempts at projects, heuristic methods or any form of self-management in the classroom. Such ideas and methods find little tolerance within schools if they are not permitted outside. On the other hand, there are examples where the teaching staffs in some countries have been opposed to 'progressive' reforms which appear to have been endorsed by the general public; or at least by central government acting in the name of the public. In our own society the comprehensivisation of secondary education is a case in point, where the parliamentary department has been opposed by local authorities, and where in some instances local authority has been vigorously opposed by teachers, educationists and parents (104, pp. 66–9).

Culture acts as a type of filter, rejecting outright certain changes and modifying, sometimes quite radically, others that it permits to pass through. Some of the studies of anthropology are quite relevant here, since they have demonstrated that responses to change can be predicted only through a very careful consumer research on the receiving environment (85). When a study was made of the response of North American Indians to Christianity, for example, it was discovered that those tribes organised on a patrilineal basis were more receptive than those matrilineally instituted. Christianity offered them a divine male hierarchy with the Supreme Father at the head and a rigorous male domination. In this respect the modified patrilineal symbolism of Catholic Christianity, with the intrusion of the matrilineal and matriarchal figure of the Blessed Virgin Mary, was more likely to find some congruence with the matrilineally organised tribes than was the un-

compromising masculinity of Protestantism. In a very different area of culture, the practice of boiling drinking water has been resisted where theories of 'hot' and 'cold' pervade ideologies of food and health. Television was adopted early by families who were attuned more to the present than to the past or to the future (73).

There exist cultures, as well as institutions such as schools, which resist borrowing or adapting from other societies and cultures. This is mainly because they have established their behaviour upon spiritual rather than upon biological or empirical standards. Their utensils for eating and drinking happen to be sacred objects – or perhaps one ought to say that their sacred objects share both the spirituality and the utility of life. Their farming seeds are held in a sacred store in a holy place, and are regarded as of divine origin; specially blest by their priests or holy men, they are, therefore, irreplaceable, and incapable of substitution or improvement from outside (153, pp. 115, 264). The rearing of children, again, is done according to a specific ritual which is both secular and sacred, and – like the laws of the Medes and the Persians – unalterable (85, pp. 213–17). The attempts to modify or eradicate certain forms of female circumcision in the Sudan, for example, met with vigorous resistance since it was regarded as an unwarrantable attempt from outside to change ritualised religious procedures; whilst the almost incredible, as well as to us both cruel and dangerous, initiation rites of many simple societies, are so much part and parcel of their culture that any essays to stop or change them are regarded as an attempt to alter the very forms of their existence. Historical and anthropological accounts are full of the tragedies caused by often mistaken fervour to change and 'improve' primitive societies by attempting to eradicate at a stroke such an institution, for example, as polygamy because it was 'unchristian', or did not fit in with the monogamist's concept of morality.

Clearly, in all this, much more is at stake than the details of any particular innovation. Countries are at very different levels with regard to the general appropriateness of change, as measured by various indicators. The acceptance of new ideas and practices will be slower or quicker in proportion to the strength of the cultural cohesiveness of the society, and also the influence of neighbourhood and kinship groups. The distinction between traditional and modern societies is a good indication of how rapidly change is generated and incorporated under normal conditions. Such characteristics as the extended family system, class structure based upon traditional social status, religious and ethical factors emphasising obedience and duty rather than rationality and personal responsibility and initiative – all these tend to perpetuate an education system which is based upon memorisation, ritualisation, fixed status, discipline-centred methods, verbalism and social prejudice.

In the area of agriculture, rural sociologists simply tally the proportion of recommended farm practices which are actually adopted over a given number of years in a sample of countries.

2 *Readiness*

It was suggested earlier on in Chapter 3 that there exists a cultural atmosphere, or *Zeitgeist*, which prepares the general climate for a particular innovation. This environment variable is obviously not easy to measure. Perhaps the best way to attempt to do so would be (a) to estimate the weight of public demand, or (b) to analyse the properties which any particular innovation has in common with other changes which have already been accepted, It is virtually impossible to know where an innovation starts; it exists already in the target environment in other patterns. School systems have gradually become increasingly concerned with individual pupils and their personal development of abilities and aptitudes, as distinct from mere socialisation. In such school systems self-instructional methods, pupil and student self-management, new curricula in art and music, and non-streamed classes have come to be regarded as vital changes. Whilst it may be true that some pupils learn only in order to avoid punishments – although that seems highly improbable in these days – it is equally true that there are some school systems which are designed entirely on the basis and in the belief that pupils learn because they enjoy learning; or at any rate that they will always learn what they enjoy learning, and therefore that school lessons should at least be made enjoyable; and that children generally want to find out and investigate things, so that if they are presented with the right sort of milieu they will be ready and motivated to learn.

The Origins of Change

Those case studies which have been made in education indicate that most initiatives for change and innovation originate from outside the schools. In keeping with the general organisational tendency towards stability or equilibration, most school systems are themselves more preoccupied with operating existing programmes. D. Griffiths (52) holds that changes which are made in response to insiders are concerned more with the clarification of rules and the explication of internal procedures, whilst those made in response to outsiders are concerned with new rules and procedures, and possibly with changes both in general purpose and direction. Griffiths also maintains that practical administrators are working according to this principle when they have recourse to external agents to suggest and make changes; such external agents include evaluation teams, consultants, time and motion study units, citizens' committees and professional organisations.

Griffiths also makes the proposition that 'the degree and duration of change is directly proportional to the intensity of the stimulus from the supra-system' (52). For example, the launching of the first Russian sputnik, which it was claimed actually doubled the rate of instructional innovation in New York within a period of fifteen months, constituted a crisis which accelerated the invention and adoption of change. But, for all that, the diffusion and durability of such change are doubtful. Of course, a great deal of legislation was activated and a considerable amount of creative work undertaken as a result of this innovation; but people – especially those concerned with teaching and in the educational profession generally – are apt to change their habits slowly and to defend them with considerable tenacity. In the example of the sputnik, H. M. Brickell (17) has reported that in spite of the increased rate of curricular change, particularly in mathematics, science and foreign languages, the great majority of schools remained untouched. He adds that:

'Most changes involved an alteration of subject content (ordinarily different information and more of it), or in the grouping of pupils (most commonly class size reduced or varied). Few programmes embodied changes in the kind of people employed, in the way they were organized

to work with students, in the nature of instructional materials they used, or in the times and places at which they taught. The programmes which did embody such changes often touched the work of only two or three teachers.'

In recent years some attempts have been made to introduce change in American education by importing outside consultants. Two American projects, namely, the Co-operative Project for Educational Development (COPED) and Research for Better Schools (RBS), employed the 'trainer' or 'change-agent team' as an instrument for internal reform. M. B. Miles (89) has referred to these mechanisms as 'temporary systems'; they are, he suggested, more flexible, short-term 'task forces', as opposed to the 'permanent system' from which the school cannot escape. Whether one is considering industry or education, the most effective agents for change would appear to be social psychologists who, operating as behavioural engineers, elicit the awareness of the nature of problems, individual needs, potential or new ideas from the client himself, rather than originate new devices outright and then attempt to persuade consumers to adopt them. Many of their organisational procedures, such as role playing, training in sensitivity, and intensive conferences, are similar to counselling and psycho-therapeutic techniques used with individuals. Another technique is the assignment of a 'neutral' officer as senior tutor, director or dean of innovation, curricular change and so forth. Such appointments are sometimes made with a skeleton staff, or the tutor concerned may be, in effect, a 'roving educational catalyst' who becomes involved in the planning of a variety of departments, and whose function is to act as a protagonist of change in curriculum, content and method. As such, he may be deliberately provocative and at times highly heretical.

Change is often expedited by commercial firms in market economy countries. A new textbook, for example, may have immediate repercussions over a wide area. With regard to textbooks, laboratory materials, kits, audio-visual aids and so forth, profit-making firms tend to innovate early, before the majority of schools have begun to change, and to attack aggressively with advertising and sales representatives. On the other hand, commercial interests may tend to obstruct changes likely to reduce the market for a popular and profitable product already in wide use. The net result would appear to be that the more conservative schools are urged forward and the more innovative are held back (17).

The decisive person in a large number of case studies turns out to be the chief administrator of the school or the local education authority. There are many changes which must inevitably be applied from above, such as the employment of new teachers, the addition of new subjects or

new courses in the curriculum, the reallocation of time between different subjects, or the institution of specifically experimental programmes. There are so many vested interests in terms of subjects and their importance on the time-table, that many new ideas for interdisciplinary work or new courses tend to get stifled at birth because no one is willing to give way unless forced to do so from above. This may mean that the external pressures through which changes come are transmitted via the administrator, and that such changes are made essentially to please or to placate outside agents. But the chief administrator is, in fact, neither inside nor outside the system: he stands between the functionaries of the system and the representatives of the community, and so he has a balancing role. G. Spindler (140) holds that for this reason

'school administrators are rarely outspoken protagonists of a consistent and vigorously profiled point of view. Given the nature of our culture and social system, and the close connexion between the public and schools, he (the administrator) cannot alienate significant segments of that public and stay in business.'

Much, of course, depends upon the nature of the system itself as to whether or not the administrator is able to effect changes within that system. The system may not particularly suit his leadership, which may be authoritarian, benevolent autocrat, democratic or charismatic leader. In an authoritarian system, in which teachers are accustomed to receiving detailed instructions, a *laissez-faire* attitude to change is not likely to evoke much response. A study by R. I. Miller (94) demonstrates that the influence of the headmaster on the adoption of change increases with the frequency with which he is seen engaged in proffering constructive suggestions to the members of his staff, bringing educational literature to their attention, discussing with them their personal and professional activities, or displaying that he knows precisely what is happening in the classroom. Some studies have revealed a high correlation between the amount of staff inventiveness, as measured by the mean number of new practices developed by each teacher, and the staff's awareness of the headmaster's support for innovative and imaginative teaching.

SECTION FOUR : CHARACTERISTICS OF RESISTERS AND INNOVATORS

Chapter 12

Resisters

It is held by anthropologists (67. p. 45) that resistance to change is proportional to the amount of change required in the receiving system. Individuals tend to resist most strongly at the point where the pressures of change are greatest; they come to see change as a threat and will, therefore, react defensively, often by using former practices more secretly, or by modifying the new practices in such a way that they are made increasingly to resemble the old. Combined curriculum courses and many forms of interdisciplinary study tend, after a time at all levels, to revert to the more conventional and the more familiar. Joint degree courses, which at first sight appear on paper to be highly imaginative and novel, frequently end in the subjects being taught in hermetically sealed containers. The author recalls very vividly interviewing a university graduate in a 'joint honours' course in history and philosophy on his application for a post-graduate teacher-training course. When asked what sort of links were made in his university course between history and philosophy, his immediate response was 'None at all'. That he had made some links himself was quite clear in discussion, but it was equally clear that, at university department level, there had been considerable resistance to anything approaching the nature of inter-disciplinary study.

R. G. Havelock (61) has reported on an industrial study in which there appeared to be very little disturbance or resistance to change until the change itself became imminent. This seems fairly true of change generally in academic circles. There is a great deal of lip-service paid by lecturers and teachers alike to novelty, change and innovation in education – provided none of it immediately affects them. But resistance occurs immediately any specific changes are suggested for implementation. In particular, the teacher will tend to resist all forms of change

which will leave him with less control over his own classroom and the pupils; the lecturer will resist the change that in any way tends to lessen his position as an authority in his subject, or that will put him in the vulnerable position of having to learn something about someone else's subject – a role in which he finds himself acting not only as a learner but also as a subordinate, very often, to someone in an 'alien' department.

Most strategies that are designed to facilitate change will concentrate on lowering resistance to it. G. Watson (157) suggests that instead of trying to persuade teachers to pay attention to individual differences among pupils, they should be asked to analyse the factors that tend to prevent such attention – for example, overcrowded classrooms, lack of textbooks and individual equipment, single textbooks for all members of the class, standard tests, identical exercises which ignore individual levels and so on. Once the teacher has been relieved of pressures such as these, he is permitted to develop a natural tendency to adapt to pupils in an entirely new way and, more specifically, as different individuals. Fundamentally, the idea behind the technique is simply to introduce innovation by means which are calculated to cause the least amount of resistance and disruption.

Resistance can be seen in terms of the sort of curve we have already examined in Chapter 9 when we considered rates of diffusion (see Figures 6 and 7). A resistance curve is, in fact, a mirror image of an adoption curve. R. G. Havelock (61) has expressed the theme in terms of a formula, namely,

$$\text{Innovation} = \text{Demand} - \text{Resistance}$$

in which the factor of resistance, however great the demand may be, will inevitably limit the success of the innovation. The laws of supply and demand in the world of educational innovation do not follow any precisely predetermined pattern; and resistance to innovation is certainly not always amenable to any logical or rational analysis. Resistance sometimes occurs where one would least expect it, and for reasons that one never imagined. In defence of the status quo all sorts of rationalisations have been dreamed up which, although not rational in themselves, are very difficult to dismiss by reasoning. Thus, in one school it was argued very strongly that the introduction of liberal studies, including introductions to philosophy, ethics, psychology and sociology, at sixth-form level and for all pupils, would (a) detract from the main task of preparing them for normal 'A' Levels in science and arts subjects; and (b) result in many of the pupils taking up these 'odd' subjects at the university instead of gaining scholarships in arts and science! The whole of these arguments represented, in reality, resistance to minority time on

the time-table being used in a positive and educational way; resistance to utilising time which might otherwise 'more profitably' be employed on main 'A' Level subjects; and resistance to the very real possibility of pupils becoming dissatisfied with, and being weaned from, their more conventional main subjects, which gave a certain kudos to the teachers in the existing system, in order to take up something novel, and perhaps not yet quite respectable.

G. Watson (157) has set out a stage theory of resistance to typical innovations as follows:

(1) There are massive and undifferentiated innovations: few individuals will take such changes seriously.
(2) The pro and con sides for change are clearly identifiable: here resistance can be defined and its power fully appraised.
(3) There is direct conflict as a result of the proposed innovations: here resistance is mobilised, and this becomes the really crucial stage.
(4) Those who are effecting change, i.e. the Changers, are in power: here considerable wisdom is required in order to keep latent opposition from mobilising. Resisters at this stage are usually regarded as cranks, obscurantists and obstructionists.
(5) The first circle is completed: old adversaries are now as few and as alienated as advocates were in the first stage. The advocates of existing innovation now become the resisters to new change.

A. RESISTANCE IN PERSONALITY

It is obviously important to locate the mainsprings of resistance to change and we shall, therefore, examine briefly three taxonomies proffered in the literature on the process of innovation.

I. G. Watson (157): Eight forces of resistance

1 *Homoeostasis.* This is the organic desire to maintain balance, which is expressed in physiological terms, for example, in the necessity for maintaining fairly constant such states as body temperature or blood sugar. In educational terms there is the example of the school administrator who, after a brief period of sensitivity training, is for some time more open and receptive to suggestions from teachers, but who soon reverts to his more characteristically brusque manner and arbitrary attitude towards all suggestions. There is nothing strange or unusual about this change of attitude: we all tend to become sated with novel notions and innovations, and there comes a time when we have had

enough and we begin to react strongly to almost anything new. We want security and permanence; we need homoeostasis. This sort of resistance, which is of course not always fully conscious or deliberately active, is to be found in virtually every educational institution in which individuals enjoy pursuing the even tenor of their ways. Virtually everyone who has experienced an innovation in such an institution will agree that, whilst the change itself was interesting and, at first, perhaps even exciting, they nevertheless looked forward to the time when the innovation would be absorbed and there would be a general return to homoeostasis.

2 *Habit.* People generally prefer the familiar to the unfamiliar; we like to exist in a recognisable environment in which there occurs as little change as possible. When actions, words and operations become habitual we are not forced perpetually to think about them; they are part of our daily routine and they provide a stable back-cloth of reliability and security. Unless the situation changes noticeably, organisms will continue to respond in their accustomed way.

3 *Primacy.* This is perhaps another way of saying that first impressions are the lasting ones, and this is borne out by experiments with both animals and children on imprinting. As learners we have all had the experience of learning to perform a mathematical operation for the first time in a particular way, and then of continuing to use that method for years. Then, one day, a teacher came along with a different method – easier, neater, more slick, perhaps even more rational. We learned it because we had to, even though we didn't like it and saw no reason to change; we even used it when this particular teacher was around, but in the privacy of our own homes we reverted to the old, well-tried, well-practised, if slower method. The way in which the organism first learns successfully to cope with a situation will set a pattern which tends to persist. It is a fact that although teachers may attend the odd in-service course which seeks to promulgate new ideas, when they return to the classroom they still tend to revert to the way in which they taught before, and even to the way they themselves were taught in childhood. There is a great reluctance, for example, among student teachers to adopt new and unfamiliar methods; the 'old ways' are almost invariably 'best'.

4 *Selective perception and retention.* Another form of resistance to innovations and change is to admit only such new ideas as will fit into an established outlook, as for example in protecting any specific prejudice by blocking out new information. We are all guilty of this particular type of resistance; we hate having our most treasured illu-

sions destroyed by new data, information or interpretation; we all select the evidence that appears to support what we already believe or want to believe; and we are loth to adopt new possibilities or world systems which are contrary to what we have always believed and accepted. We perceive things, events, data, even people, in a selective sort of way in order to retain intact the safe world that we know and in which we feel comfortable.

5 *Dependence.* Resistance to new ideas and change may result from the fact that we lean very much upon our peers and enjoy a common body of knowledge or acceptance of similar ideas, views and methods. This group identity is important to us; it gives us a sense of solidarity with our peers and a feeling of acceptance – 'there is safety in numbers'. In a hierarchical system this sense of dependence extends to those both above and below us, and solidarity is increased by the sharing of ideas and views throughout the system. That sense of solidarity is destroyed when a particular individual attempts to innovate, and he will frequently experience a solid block of opposition throughout the hierarchical structure. The independent, the rogue or maverick in the system may well have a rough time of it simply because he is upsetting the solidarity and sense of interdependence among his peers. And once he is stigmatised as an outsider his innovative ideas may stand very little chance.

6 *Superego.* There is a tendency to maintain moral standards which have been absorbed in childhood from authoritarian adults. Tradition, custom, mores, all exert a great hold upon people and very often change is resisted or rejected for no reason other than the fact that it represents something new, unfamiliar, different, alien or even 'subversive' (119). The individual's superego exerts a strong influence upon his acceptance or rejection of any particular innovation: the new inevitably is placed in juxtaposition to the old in order that some assessment might be made in terms of values as well as material loss or gain. One has heard the suggestion by older teachers that certain changes would be 'immoral' because they would result in experimentation upon children, using tender young minds as means instead of ends, or regarding them as mere things and not as developing individuals with personalities. The retention of traditional content and methods is thus often the direct result of this censoriousness of the superego and a blind acceptance of what already is.

7 *Self-distrust.* We are all aware of existing malpractices but we hesitate long before attempting to modify them or making any change. This is due partly to the general reluctance to change, but partly also to the

personal sense of distrust. Pupils, parents, teachers and administrators, all question their own ability to stop existing practices or to introduce new, more effective or more desirable ones. We are all prone to this self-distrust until we determine to make the first move; once we have done that we are able to absorb or even to initiate change much more readily.

8 *Insecurity and regression.* This is a particularly strong force of resistance in a world in which change is virtually continuous, and in which the rate of change is accelerating fast. People nostalgically look over their shoulders to the former days of the quiet pursuance of fixed hopes, aims and ambitions; people were settled and knew where they were going; they had carefully worked out their careers and their paths were clearly plotted. This applied very much in the field of religious belief in which people's prejudices are generally pretty strong, and in which they feel a sense of personal safety and security. Even after change and novel ideas have been accepted and absorbed there is still a tendency to revert to the 'old paths' which are safe and familiar. Indeed, there are as many reactionary appeals to 'fundamentalist' forms of traditional education as there are to 'fundamentalist' forms of traditional religion. Man has an urgent desire to 'go back home', to regress to the normal, the secure and the familiar.

II. A. E. Guskin (61, pp. 4.1–4.36): Individual variables in knowledge utilisation

1 *Sense of competence and self-esteem.* Those individuals who have little confidence in their own abilities are less willing to attempt to try out innovations. In their daily working lives they would be more prone to reject the strange and the new because such intrusions represent a threat to their personal competence. It is true that most professional groups display a certain resistance to change, but studies made of the attitudes and behaviour of teachers indicate that they tend to be more resistant to new practices than other professionals, and that their greatest fear is that of failure.

2 *Authoritarianism and dogmatism.* A study of personality types (75) reveals that the authoritarian personality has a strong tendency to accept almost without question the directives of dictatorial leaders, and rigidly to reject any changes that might emanate from outside sources. People of this type are obviously less open-minded than others; they hold fast for a long time to an original interpretation or belief concerning which they have felt certain and to which they are utterly committed. The

accidents of place, time and milieu cannot convince them that they think and believe as they do because they were born in the particular environment responsible for their convictions. When faced with changes in their environment they tend to respond slowly and to see only those things capable of being reconciled with their original view of the situation. In clinical studies, teachers who scored low on the dogmatism scale were predisposed to accept educational innovations, while those scoring high accepted innovations only when they were proposed by dictatorial leaders.

3 *Feelings of threat and fear.* We develop, as we have seen previously, a self-image which we seek to preserve and defend against all external threats: we take a pride in our consistency and our reliability, and are afraid of anything that might present a threat to such recognised qualities. As a result, in order to maintain that image we tend to distort new information: in this way we absorb and assimilate it, rather than change or accommodate the self.

4 *Self-fulfilling prophecies.* We are all accustomed to the action of self-fulfilling prophecy both in our own lives and also in respect to other people's. The more we anticipate failure, the more are we likely to fail; the more we expect success, the more are we prone to succeed. Our early experiences of success and failure will set up patterns for future behaviour and expectations; although it is perhaps true to say that there are those who are more motivated through failure than through success. Where initial changes have proved debilitating and time-consuming, a pattern of resistance may be set up in order to avoid such exhaustion in the future. There is, it should be noted, a tendency for certain cynical reflections to be evinced in the teaching profession when someone is enthused with a new idea – perhaps not without a certain justification – 'Haven't we been through all this before?'.

III. O. Harvey (59): Conceptual systems approach

O. Harvey has suggested an approach which he refers to as 'conceptual systems', and he argues that different people have different learning and cognitive styles. He holds that they organise and present information in specific ways that are closely related to their personality traits. When any individual is faced with a particular, given situation, he will structure or restructure it in order to make sense out of it in ways compatible with his own motives and his own subjective ends or purposes. In other words, learning and thinking are usually done with some purpose in mind and the material is shaped and tailored to that

particular purpose. In the conceptual systems that they develop individuals will vary from the highly concrete to the highly abstract (113).

In general, the characteristics of the highly abstract self-system are the opposite of those of the highly concrete, the main characteristics of which are as follows: a tendency towards extreme and more polarised evaluations, such as black–white, good–bad, right–wrong; a greater dependence upon status and authority as the controlling guidelines to belief and action; an intolerance of uncertainty, with a tendency to form judgements of novel situations more quickly; a poorer capacity to act 'as if' (106, p. 60) (151), to place himself in the position and role of another person (106, chapter 12) (84), to visualise a hypothetical situation; the holding of opinions with greater strength and greater certainty that such opinions or beliefs will not change with time; high conventionality and ethnocentrism; high score dictatorialness (high need for structure, low flexibility, low encouragement of individual responsibility, high punitiveness and low diversity of activities).

B. RESISTANCE IN ACTION

We have looked at resistance in personality in some detail and we will now consider two examples of resistance in action. G. Eichholz and E. Rogers (43) carried out an attitude survey of resistance to new educational media on the part of elementary school teachers in America. In their sample there appeared *eight types of rejection responses*:

1 *Rejection through ignorance.* This type of response occurred when a given innovation was unknown, or its sheer complexity led to misunderstanding – 'I don't know how to use the movie projector'; 'I don't know what to do if a fault occurs or the film breaks'; 'I don't always know what audio-visual materials are available anyway.'

2 *Rejection through default.* There are those individuals who just completely ignore the existence of new media, such as tape recorders ('I never use a tape recorder'), closed-circuit TV, teaching machines, Cuisenaire, overhead projectors and so forth. These things might never have been so far as they were concerned.

3 *Rejection by maintaining the status quo.* This occurs when the teacher does not accept an innovation because it has never been used in the past – 'I tend to do the teaching process mechanically, because the book does it that way'. Habitual processes are easy, however boring, and whilst the maintenance of the status quo may be regarded by some as a good thing in itself, it is nevertheless true that there is nothing so

soul-destroying for the teacher as the perpetual repetition of the same material via the same methods.

4 *Rejection through social mores.* This occurred when a particular teacher believed that her colleagues did not find an innovation acceptable, and so did not use it herself: 'I don't use the museum. There are only certain classes that visit the museum.'

5 *Rejection through interpersonal relationships.* This was done chiefly by suggesting that friends did not use an innovation, or that a particular milieu or school environment made the innovation unacceptable: 'The head doesn't think less of a member of his staff because he doesn't use audio-visual materials.'

6 *Rejection through substitution.* The suggestion here is that the actual methods and materials used by the teacher are just as effective in the learning process as the utilisation of audio-visual aids, and that, therefore, there is no need to adopt such an innovation. 'I do more work with charts and things like that than with audio-visual materials.'

7 *Rejection through fulfilment.* Teachers may conceivably feel that the methods they are adopting are already highly successful, and that they themselves and their pupils are completely fulfilled through the methods they are using. In some cases this might conceivably be true: in some it might be sheer prejudice. The very idea of already knowing the 'best' or 'only' way to teach smacks somewhat of priggishness, but it is not uncommon – even if we are not all guilty of it to some extent. We all have our particular interests and skills and tend to be somewhat insular about them. 'I would not take additional instruction in A-V materials because I think you take those things in which you are interested. I'm interested in art and music.'

8 *Rejection through experience.* Finally, of course, individuals have tried innovations and have had little success with them, and as a result have decided to reject them. Very often the trial period was too short to decide anything really conclusive about its effectiveness; perhaps the first occasion was a complete failure, and the teacher could not face the prospect of another failure. Or it may have been that the innovation as such was never really tried because it was never completely understood or analysed; the teacher was never really on the inside. Some excuse must, of course, be found for not pursuing the innovation – 'The children like filmstrips at first because of their novelty, but after a while they get bored with them.'

Eichholz and Rogers (43) have also presented a framework for the identification of rejection responses, which are tabulated in Figure 8.

Here a distinction is made between 'real' and 'stated' reasons for rejection.

Figure 8 *A Framework for the Identification of Forms of Rejection*

Form of Rejection	Cause of Rejection	State of Subject	Anticipated Rejection Responses
1. Ignorance	Lack of dissemination	Uninformed	'The information is not easily available.'
2. Suspended judgement	Data not *logically* compelling	Doubtful	'I want to see how good it is before I try.'
3. Situational	Data not *materially* compelling	(a) Comparing	'Other things are equally good.'
		(b) Defensive	'The school regulations will not permit it.'
		(c) Deprived	'It costs too much to use in time and/or money.'
4. Personal	Data not *psychologically* compelling	(a) Anxious	'I don't know if I can operate equipment.'
		(b) Guilty	'I know I should use them, but I don't have time.'
		(c) Alienated	'These gadgets will never replace a teacher.' 'If we use these gadgets they might replace us.'
5. Experimental	Present or past trials	Convinced	'I tried them once and they proved to be absolutely no good.'

A second study concerns seven contested innovations in America which revealed that opponents generally were of four types:

(a) those who favoured the innovation but disagreed with the particular form it should take;
(b) those who created independent groups of their own in order to defeat the innovation;
(c) those who were inspired or coerced into opposition by this second group;

(d) those whose resistance was only incidental or situational but whose real interests lay elsewhere.

It is naturally true that there is frequently a very good cause for resistance, since all changes are not necessarily warranted or desirable, resistance may clearly be justified. The value, quality, relevance or even feasibility of the proposals may be judged to be deficient at the outset, or even at any point in their implementation; and this is most probably the case when the planners of change are alienated from the world of those for whom they have been planning. It is of importance to note that when innovations are exported or transferred from one society to another, or from one context to another within the same society, the technical assistance teams who bring in, for example, an educational TV network, a teacher-training scheme or a new curriculum, do not necessarily perceive, understand or value the basic purposes of the schools into which the innovation is to be imported. Their overriding object is to ensure that the target audience accepts, or 'buys' the proposed innovation; and this may be achieved with very little concern for either the depth or durability of the adoption – to say nothing of the possibility that the innovation might conceivably be meaningless, if not positively harmful.

Some technological innovations have been so demanding of time, space and equipment that the actual servicing of the innovation has been responsible for disrupting instructional practices elsewhere or for leaving other institutions with far fewer resources. In other instances, a new idea or practice has started a chain reaction of resentment among teachers, impatience and intolerance among administrators, and suspicion and wariness among pupils and parents – with the inevitable result that other sectors of the school have suffered even though the particular project may have been successful.

In conclusion it may be said that when experts themselves are unwilling to identify with, or be educated into, the value system of those for whom their expertise is intended, they perform a double disservice. Firstly, they promote a new method or tool which is unlikely to survive; or, if it does somehow survive, it is unlikely to resemble the original method or tool proposed, and they leave the school or other institution with no greater capacity or internal resources to solve its own problems than were actually available before they – the experts and innovators – came on the scene. The main problem for local administrators and teachers is to differentiate between a change which really does pose a threat to the security and stability of the community, and one which is resisted simply because it is new and must at the beginning inevitably feel alien.

Innovators

Innovators are rarely popular people: their merchandise is concerned usually with the untried, and they tend to be regarded as individuals who are opposed on principle to the present order of things, but who have nothing really solid and demonstrably certain to supplant it. Inevitably they have more enemies than friends; their enemies are represented by those whose profit derives from the status quo, and their friends are more often lukewarm and guarded than really supportive and wholehearted, whilst they believe hopefully that in some way they will probably benefit from the new order.

In his compendium of case studies M. B. Miles (90) has described the innovative person as strong, benevolent, high in intelligence and verbal ability, less bound by local group norms, more individualistic and creative, revealing authenticity and enthusiasm when attempting to persuade others, frequently rebellious, alienated, excessively idealistic, and prone to resentment, resistance and defiance in the face of adversity or disillusionment.

In his article on 'Conceptual Systems and Attitude Change', O. Harvey (59) has provided us with a somewhat clinical picture. The innovator features in his fourth conceptual system, which is characterised by a considerable degree of abstractness; it is a much more complex system, enriched and mediational with greater ability to move out of immediate situations for purposes of comparison and perspective; there is less absolutism and greater relativism, more freedom to analyse problems and provide solutions without any fear of punishment for deviations from established 'truth' or social imperatives and sanctions. In addition to all these qualities and dimensions, this conceptual system reveals a high task-orientation, a strong desire to seek information, exploratory behaviour, considerable risk-taking and strong independence. On the Omnibus Personality Inventory, for example, such persons would score high on the autonomy (AU) and religious orientation (RO) scales. Clinically they may be described as liberal, non-authoritarian, emancipated and generally open to new thoughts, ideas and experiences. Innovators are 'self-actualised'.

M. B. Miles (89) has made an analysis of the innovative personality

in developing countries, and he describes the higher innovator as a person who observes a coherent world around him which he feels will respond in a predictable way to his efforts to change it. Such an individual has complete faith in his own evaluation of his experience, he sees the surrounding world as applauding him if he achieves his goals; he has a great need for autonomy, achievement, order, help afforded to others, and support received from others.

In a similar way E. Katz (73) has categorised a person with a 'modern' orientation as one who is willing to take risks, has a belief in scientific knowledge, in the scientific approach and in objective, impersonal sources of information, has a sense of personal competence and faith in his own capacity to control the environment. On the other hand, a person with a 'traditionalist' orientation places more trust in friends and family opinions than in scientific evidence, and is prone to fatalism and conservatism.

R. Lippitt (79), in his discussion of the teacher as 'an innovator, seeker and sharer of new practices', notes that teachers are more inclined to be involved in the diffusion process of innovations if they feel that they have the authority to direct their own classroom life, and are at the same time confident that they can do so effectively. Coupled with this they need to be willing to share information with their peers about their classroom activities with a minimum of fear of rejection or failure; and finally they also need to be strongly committed to the teaching profession and willing to become involved in discussions concerning professional matters.

From his investigation of research on the diffusion of innovations in rural sociology, industrial engineering and anthropology, E. M. Rogers (127) comes up with a 'word-picture' of the innovator:

'Innovators are venturesome individuals; they desire the hazardous, the rash, the *avant-garde*, and the risky. Since no other model of the innovation exists in the social system, they must also have the ability to understand and use complex technical information. An occasional debacle when one of the new ideas adopted proves to be unsuccessful does not disquiet innovators. However, in order to absorb the loss of an unprofitable innovation, they must generally have control of substantial financial resources' (127, p. 57).

Rogers then produces a series of generalisations concerning innovators:

1 *Innovators are generally young.* Rogers argues that the young are less likely to be conditioned by traditional practices within the established culture. R. Lippitt (79), however, found educational innovators

to be both younger and older than the mean. He argued that older teachers who have returned to classrooms, after having raised their own children, were willing to try out novel ideas and methods; whilst others were bored with repeating the same material in the same way year after year. The older teachers proved to be more potential adopters of innovations than the young, whereas the younger teachers tended to be more potential innovators.

2 *Innovators have relatively high social status.* This applies to the innovators' education, prestige ratings and income. D. H. Ross (129, p. 119) concluded, from a number of studies concerned with the diffusion of educational ideas among state schools, that the wealth factor was the chief variable related to the adoption of innovations.

3 *Impersonal and cosmopolite sources of information are important to innovators.* When innovators have decided to utilise a new idea they cannot draw upon the experience of others in their social system since few members will have had experience with it. In consequence, innovators are driven to secure new ideas through impersonal sources, such as the mass media, or from cosmopolite sources outside their immediate social environment. In certain studies of the diffusion of new drugs among physicians and of hybrid seed corn among farmers, the patterns were similar: early adopters attended more out-of-town meetings (30), read the current professional journals, made more frequent trips to the city and contacted several sources before making a judgement. C. F. Carter and B. R. Williams (26) discovered that innovative industrial firms were more likely to seek new ideas from university researchers.

4 *Innovators are cosmopolite.* The formal organisations and cliques to which innovators belong are likely to include other innovators. They tend to be wide travellers and to participate in matters beyond the parameters of their system. D. H. Ross (129) found that teachers at the more innovative schools usually acquire new educational ideas from *outside* their community.

5 *Innovators exercise opinion leadership.* As a result of their prior experience, innovators are in a position to influence the adoption decision of their peers.

6 *Innovators are likely to be viewed as deviants by their peers and by themselves.* D. A. Schon (133) defines the 'product champion' as one who sponsors a new business or a novel industrial product against all forms of opposition. He sees him as 'a man of strong will, attracted to

risk, set against the established order, with great energy and the capacity to invite and withstand disapproval'.

In his study of acceptors and rejectors, H. G. Barnett (7, pp. 378–440) has described in considerable detail four orders or categories of acceptors. These types are defined in terms of their attitudes toward the novelty equivalents traditional with their group. There are, first of all, the *dissident* who consistently refuse to identify themselves with some of the conventions of their group. In order to avoid punishment they may, of course, give lip service to certain customs, but 'they mentally or symbolically shun them and would dispense with the necessity of conforming with them if they could' (7, p. 381). And the more independent and courageous these dissenters are, the more openly they rebel and withdraw from participating in the customs that offend them.

Secondly, there are the *indifferent* who are prepared to accept new ideas because they have not irretrievably committed themselves to a custom or to an ideal of their society. Since they are not unequivocally dedicated to any particular ideology, 'they find no contradiction in adopting alternatives or in abandoning what others value. They are more open-minded and objective than are their opposites, those who have committed themselves' (7, p. 385).

Thirdly, there are the *disaffected*. Some individuals begin by being active participants in particular aspects of their culture. Later they acquire a distaste for those aspects, and many may experience a change from a positive to a negative attitude as a result of some personalised event. Such a change may be sudden or it may develop gradually within the human consciousness. The disaffected person becomes at odds with society as a result of such variables as marginal status, disillusionment, frustration, generalised social anxiety, guilt depression or circumvention by specified enemies.

Fourthly, there are the *resentful* who are the have-nots rather than the care-nots. They are negativistic towards their own roles, but at the same time they are enamoured of the roles of more favoured individuals. In Barnett's words,

'They are envious and resentful of those who enjoy the things they cannot. They are not resigned to their fate; and by contrast with the complacent individuals whom they envy, they are markedly receptive to the suggestion of a change which will at least equalize opportunities or perhaps even better, put them on top and their smug superiors on the bottom' (7, p. 401).

Thus the resentful is susceptible to a suggestion of change because he has little and often nothing to lose by acceptance.

E. Katz (73) claims that in traditional or developing societies the most marginal and disaffected are the innovators, whereas in the most industrialised countries the situation is reversed. If Katz's claim is valid it clearly has implications for the politics of educational innovation. In general, deviant innovators are people who have been imperfectly socialised and therefore do not know what is expected of them in a given situation. They may be more free to take initiative than those who have been more socially programmed; or, alternatively, they may be individuals living in a social system in which they realise that they cannot attain socially legitimate goals by the accepted means, and they are driven as a result to use new and deviant means to reach their objectives.

Chapter 14

Traits and Functions of Innovative Institutions

Simple societies, in the past and still some in the present, have seen no need to create a separate institution such as the school in order to initiate their children into society. Socialisation has begun to take place from the moment of birth via day-to-day activity and participation in the total life of the society. The necessary skills and activities of the society have been imparted through this gradual, but involved and continuous participation in the social life of the tribe. Any special or secret lore has been finally communicated through a particular period of initiation at a specified time in the life of the individual: but it is a 'once-and-for-all', concentrated period of instruction and learning.

Society has created such institutions as schools in order to achieve certain general aims as well as other more specific objectives which, because of its increasing complexity, it discovered that it could not easily achieve without some clearly defined organisation. The organisational forms to be found in education are professional, collegial and bureaucratic, the object of which is to facilitate a series of interactions between teachers and pupils by means of formal methods of teaching and learning in the somewhat artificially created, hothouse atmosphere of the school classroom. The more innovative schools tend to monitor these interactions more closely and consciously, and they will attempt to modify them so that they might serve their avowed instructional objectives more efficiently. In order fully to appreciate the importance of this monitoring role we need to look more closely at the structural characteristics that distinguish such innovative systems from those which more frequently resist or reject improvements.

There have been, in fact, quite lengthy discussions by sociologists and industrial psychologists concerning the characteristics of innovative

organisations. In his consideration of the creative organisation G. A. Steiner (141, p. 262) holds that, in general,

'Creativity is more likely to flourish in new firms than in old; in small firms engaged in cut-throat competition rather than in firms that have the market all to themselves for a time; possibly in marginal firms, in the sense that they are staffed by people new to the particular industry and with different approaches; finally, in firms headed by people who are themselves creative.'

Steiner's description of the creative organisation is one that encourages 'idea men', has open channels of communication, is decentralised and diversified, encourages a variety of contacts with outside sources, employs heterogeneous types of personnel, uses an objective and fact-finding approach and is willing to explore new ideas on their merit, regardless of the status of their originator. In short, then, a creative or innovating organisation is a collection of creative persons who do not get in one another's way.

For P. Mort (107) schools with 'high adaptability' were those in which the teaching personnel were more highly trained and qualified and more receptive to current educational ideas; where administrators provided active support for adaptations rather than remaining neutral; and where the public's attitudes favoured modern practices. Mort attempted to prove that the key dependent variables were (a) higher financial support and (b) higher level of parental education and occupation, but his thesis has not been corroborated by research in other parts of the USA or in other countries.

Another study undertaken by R. L. Marcum in 1968, and quoted by L. Hilfiker (64, p. 7), uses the Organisational Climate Description Questionnaire to demonstrate that innovative schools had open climates (on a continuum of open–autonomous–controlled–familiar–paternal–closed), higher expenditures, younger staff members, larger professional staffs, and staff members who remained in the system for a shorter period of time.

M. B. Miles (91) examines a number of these characteristics, as well as others, in his ten dimensions of *organisational health*. Generally speaking a healthy organisation has the capacity not only to survive its environment, but also to continue 'to cope adequately over the long haul' and to develop and extend its abilities for coping and for survival. In examining Miles's list we note that these are characteristics or qualities for the measurement of which social psychologists have really only begun in recent years to design instruments and methods. The following ten dimensions are in the main drawn by analogy from the

behaviour of individuals or small groups; the first three are related to organisational aims, tasks, the transmission of messages, and the way in which decisions are made; the next three refer to the internal state of the organisation; and the final four dimensions deal with growth and changefulness.

1 *Goal focus.* In a really healthy organisation its members are really clear about goals and their acceptability. Goals have to be achievable with available resources and be appropriate, that is, more or less congruent with the demands of the environment. M. B. Miles (92) has elsewhere called for instruments and work methods in schools for specifying areas of vagueness and dissent about goals and for increasing the understanding of goals through discussion. Instruments are required to help teachers assess precisely what the short-run consequences of their work have been. In addition, we require routine behavioural data (on morals, perceived norms, conflict) as much as we require information on scheduling, staffing, and budgets.

2 *Communication adequacy.* The movement of information within organisations is a crucial matter. This is mainly because the organisations are not simultaneous face-to-face systems like small groups. Adequacy of communication involves distortion-free communication vertically, horizontally and across the boundary of the system to and from the surrounding environment. People have the information they need and have obtained it without exerting undue efforts. As a corollary to this for education systems, such indicators as adequacy of communication between teachers ought to be added, since teacher isolation is probably a result of defensiveness; one might also cite communication between teachers and children. The essential element in this last item is the requirement that adults should hear and use what children have to say. In a similar way the adequacy of communication between child socialisation agencies, including parents themselves, could be measured (92).

3 *Optimal power equalisation.* In a healthy organisation subordinates can influence upwards, and can see that their superiors can do the same with *their* superiors. In such an organisation, inter-group struggles for power would not be bitter, though undoubtedly they would be present. The units of the organisation stand in an inter-dependent relationship to one another, with less emphasis upon the ability of one unit to control the entire operation.

4 *Resource utilisation.* A healthy organisation, just like a healthy in-

dividual, works to its potential: the overall co-ordination is such that people are neither overloaded nor idling. There is, in fact, a close correspondence between their personal characteristics and the demands of the system. People have a sense of learning, growing and developing while in the process of making their contribution to the organisation.

5 *Cohesiveness.* The organisation knows 'who it is'; its members feel attracted to membership, they wish to stay with the organisation, and they want to be influenced by it and to have influence upon it. R. Lippitt (79, pp. 309–10) also stresses this point in his consideration of the teacher as innovator. He asked teachers to comment upon the characteristics and forces which hinder and facilitate innovation, with reference to the practice of teaching, physical and temporal arrangements, peer and authority relations and personal attitudes. The initial force was the innovator practice itself, and those characteristics of the practice which made it more or less attractive to or adoptable by other teachers. The educational significance of any given teaching practice and its communicability were undoubtedly important factors in its diffusion. The second major force was enshrined in the physical and temporal arrangements of the school building and school responsibilities. Physical facilities which allowed staff to hold conferences and share their ideas, and which granted them the time to do this, were important factors within the administrative organisation of the school. Thirdly, there existed a number of facilitating or hindering factors within the social structures of the school. Forces such as those concerned with the nature of peer social relationships, teacher–headmaster relationships, norms and standards for professional behaviour, and the organisational climate of the school system appeared to be very relevant. There were, finally, forces within each particular teacher which made him more or less open-minded with regard to new classroom methods and practices. Some of these were specific personality characteristics, such as attitudes, values and general openness; others were basically a function of background and training, for example, the awareness of current professional changes and innovations, grade level or subject specialisation, age and family commitments.

6 *Morale.* The implied concept here is one of well-being or satisfaction, as judged from individual sentiments or responses. This is, by its very nature, a somewhat vague concept, but behavioural scientists have attempted to isolate some of the components of high and low morale. C. Rogers (126) frequently speaks of 'psychological safety' (p. 186), a species of 'trust' (p. 175) and of 'psychological freedom' (pp. 358–9) or 'openness' (pp. 115–17). Schools with qualities of trust and openness –

as measured by interpersonal relationships and norms seen by school personnel to exist in the system – tend to create a psychological climate which is favourable to change and innovation.

7 *Innovativeness.* M. B. Miles (91, p. 20) states that

'A healthy system would tend to invent new procedures, move toward new goals, produce new kinds of products, diversify itself, and become more rather than less differentiated over time. In a sense, such a system could be said to grow, develop and change, rather than remain routinized and standard.'

There are several implications here for structure. School systems that possess these properties could be expected to institutionalise innovation; to devote space, time and money for development programmes concerned with personal career and organisation; to establish change-generating and experimental units with a research and development function; to provide rewards for innovators; to install 'environmental scanning' mechanisms whereby new developments in neighbouring schools, in community agencies and in ministerial policy-making are applied to the school itself.

8 *Autonomy.* Just as a healthy person acts 'from his own centre outwards', so a healthy organisation is independent of the environment in the sense that it does not respond passively to demands from outside, nor destructively or rebelliously to perceive demands. Like the healthy individual in his transaction with others, the school system would not treat its responses to the community as determining its own behaviour.

9 *Adaptation.* The dimension of adaptation is the concept of being in realistic and effective contact with the organisation's surroundings. Its ability to accomplish corrective change should be faster than the change cycle in the community.

10 *Problem-solving adequacy.* M. B. Miles (91, p. 21) suggests that

'The issue is not the presence or absence of problems, but the *manner* in which the person, group or organization copes with problems . . . in an effective system, problems are solved with minimal energy; they stay solved; and the problem-solving mechanisms used are not weakened, but maintained or strengthened.'

Conflicts are treated as an indicator that changes are needed. Figure 9

(see 91, p. 16) is a schematic chart which attempts to illustrate Miles's concept of organisational health.
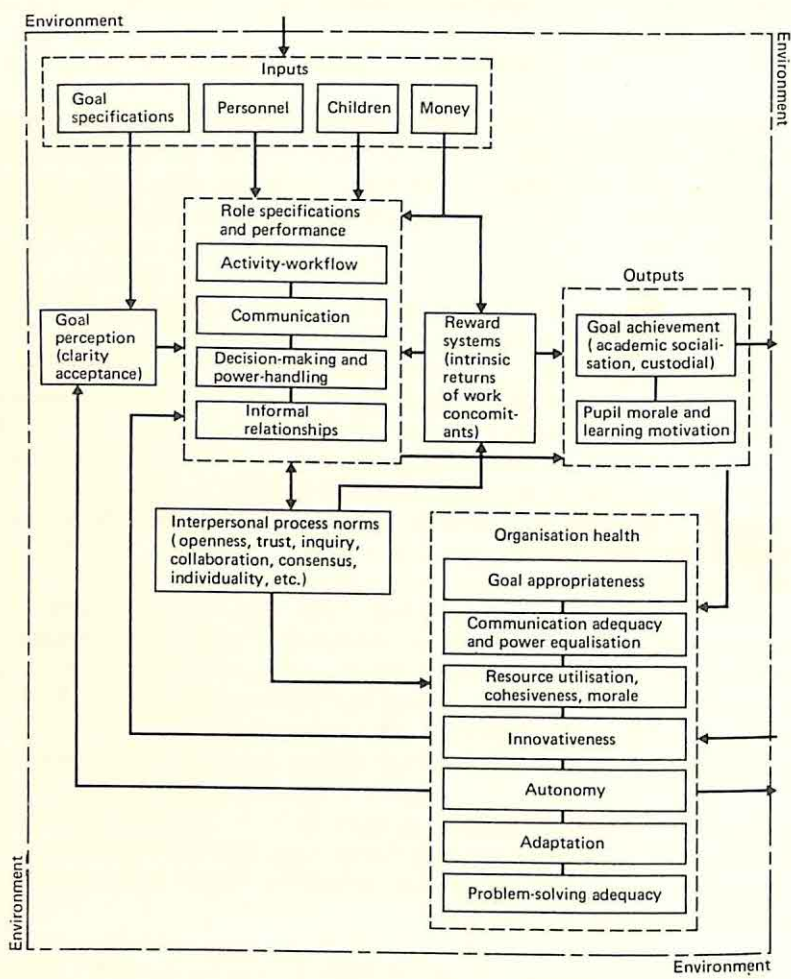
Figure 9 *Model of Organisation Functioning and Change Environment*

SECTION SIX: PLANNING AND EXECUTING CHANGE

Chapter 15

Overview of Models

Much of the literature on innovation represents an attempt to analyse changes that have already occurred, and such studies are based on historical descriptions of more or less unplanned change. From such accounts models are abstracted of the way in which the process occurred, and strategies are further drawn up in order to demonstrate how such a process might, in fact, have been accelerated. It becomes increasingly clear that we need to adopt controls similar to those applied in strictly scientific experiments. In this way we shall get to know considerably more about the dynamics of change in relation to a given innovation, when viewed from its genesis to its full adoption.

Nevertheless, such case studies as have been done in the past are more than justified in that one of the objectives was to identify a natural process of change. As we trace the sequence of events we are able to isolate the phases of change as they took place naturally, in order that we may take account of these interactions when attempting to draw up a planned sequence. These phases of change and its development are described differently according to the analyst concerned. The rural sociology model (awareness–interest–evaluation–trial–adoption) fore-sees a different pattern and observes the process from the vantage point which is different from that of the theory-into-practice model or that of the problem-solving model. Each model, in turn, as it views the change process differently, implies a different strategy as well as a different series of techniques in order that the change might be effected more easily and more perfectly the next time round.

The literature concerned with change outlines three chief types of model illustrating how change takes place, and we will accordingly make a brief review at this juncture before making a more detailed examina-tion. The first, the *theory-into-practice* model, or 'research and develop-

ment' (R and D) model, views the process as a rational sequence of phases, by which an innovation is invented or discovered, developed, produced and disseminated to the user or consumer. The innovation is not analysed from the view-point of the user, who is presumably passive; nor does research begin as a set of precise answers to specific human problems, but rather as a set of facts and theories which are then transformed into ideas for useful products and services in the phase of development. The knowledge is finally mass-produced and every endeavour made to diffuse it to those for whom it might conceivably be useful. The market is, of course, thoroughly tested and explored before this final phase is entered (61, pp. 10.41–10.42).

This R and D model is distinctly American in its emphasis upon the translation of basic research into applied knowledge. In Great Britain we are very accustomed to the brilliant theorist who has outstandingly original ideas, but who cannot find either a private or public backer to help to translate his ideas and theories into what may, indeed, prove to be quite costly practice. R. G. Havelock (61, p. 2.42) suggests that:

'It is assumed that medical progress is based on progress in the basic biological sciences and that engineering and the marvels of technology have been made possible by great advances in the physical sciences. Usually there is only a dim understanding of *how* the knowledge gets transformed into something useful, but the firm belief remains that somehow it filters down.'

Similarly, in Eastern European and Latin European systems, where R and D activities are usually centralised at the ministerial level and dissemination takes place only after a certain number of controlled experiments have been carried out, there is a variation of the theory-into-practice model. There is, however, an assumption that links exist between the research and the practice worlds, an 'interface' which R. G. Havelock (61, p. 3.21) has illustrated in the diagrammatic form shown in Figure 10.

The *social-interaction* model emphasises the aspect of diffusion, the movement of messages from individual to individual and from system to system. It is a model which is widely used in agriculture and medicine, and it underlines the importance of interpersonal networks of information, of opinion leadership, of personal contact and social integration. The general idea is that each member in the system will proceed through the awareness–adoption cycle by means of a process of social communication with his colleagues. In a number of decentralised systems, this strategy takes the form of convincing a respected teacher, adviser or administrator of the usefulness of a new practice or device, and then

of facilitating the process whereby colleagues may come into contact with the new practitioner while he is using the innovation. In Great Britain this may be done through the various teachers and curriculum
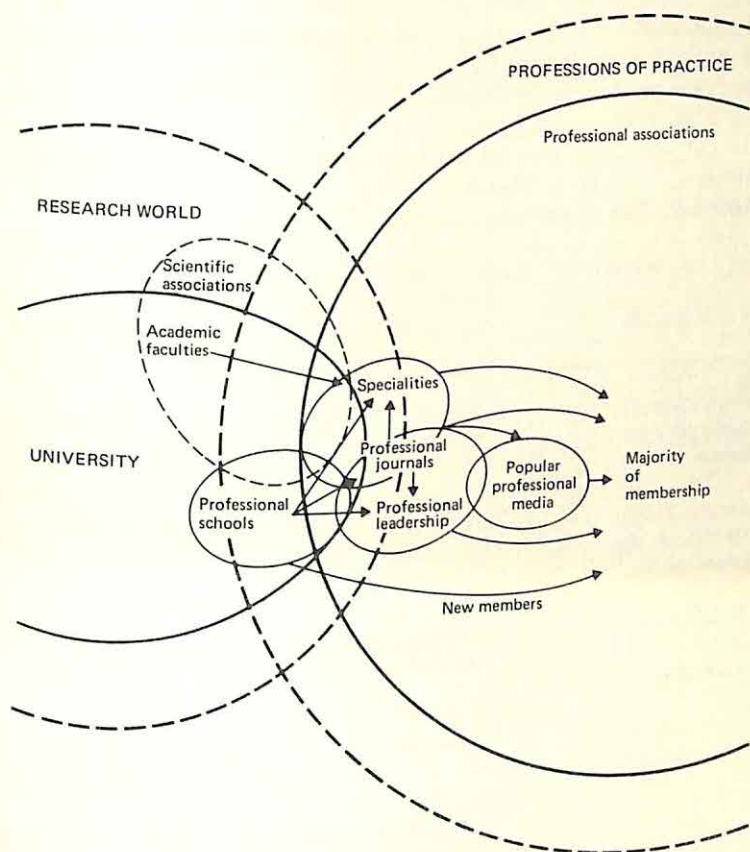
Figure 10 *The Interface of Research and Practice*

centres, at colleges of education which are promoting refresher and in-service courses for teachers, or at conferences and vacation courses that are run by county inspectors and advisers, or that are organised by the Department of Education and Science through HMIs. The Swedish system, which has heavily invested in mass media and public information, relies very strongly upon these social-interaction techniques.

The third model, the *problem-solving* model, is built around the user of the innovation. It makes the assumption that the user has a

definite need and that the innovation satisfies that need. So the process is from problem to the diagnosis of a need, then to trial and adoption. Very frequently an external change agent is required to counsel individuals upon possible solutions and implementation strategies, but the emphasis is upon client-centred collaboration rather than upon manipulation from without. This participatory approach appears to be essentially Scandinavian (67, p. 62), although it is true to say that most of the problem-solving strategies have been designed in the United Kingdom and the USA. Figure 11 is a modified form of an illustration by R. G. Havelock (61, p. 9.38) showing the way in which the three models of change operate.

Figure 11   *Typical Stages in Models of Change*

R and D	Social-Interaction	Problem-Solving
1. *Invention* or discovery of innovation	1. *Awareness* of innovation	1. *Translation* of need to problem
2. *Development* (working out problems)	2. *Interest* in problem	2. *Diagnosis* of problem
3. *Production* and packaging	3. *Evaluation* of its appropriateness	3. *Search and retrieval* of information
4. *Dissemination* to mass audience	4. *Trial*	4. *Adaptation* of innovation
	5. *Adoption* for permanent use	5. *Trial*
		6. *Evaluation* of trial in terms of need satisfaction

These three models differ also, it should be noted, in relation to the source of initiative in the change process. The R and D model stresses the *developer*, the social-interaction model stresses the *communicator*, whilst the problem-solving model emphasises the role of the *receiver*. The R and D model is closely planned, whilst the social-interaction model is highly spontaneous and natural. The R and D model studies

in particular the activities of the resource person or system, whereas the social-interaction model focuses on the user person, and the

School of Research	Stages in Research	Stages in Development	Stages in Diffusion and Adoption	
1 Research Development and Diffusion (R, D & D)	**RESEARCH** Basic scientific Inquiry, Investigate problems Gather data	**DEVELOPMENT** Invent and design Engineer and package Test and evaluate	**DIFFUSION** Promote Inform Demonstrate Train Help Service & nurture	**ADOPTION** Awareness Interest Evaluation Trial Installation Adoption Institutionalisation
2 Social-Interaction (S-I)	Research assumed	Development assumed	Some diffusion activity assumed	Awareness Interest Evaluation Trial Adoption
3 Problem-Solving	Basic research assumed	Search for solutions Establish goals and priorities Weigh and evaluate possible solutions Select best alternative Plans for implementation	Need Diagnosis Establish relationship with outside expert	Installation Evaluation Revision Institutionalisation Change relationship terminated Possible diffusion to others

Figure 12 *Stages in Models of Change within Three Schools of Research*

problem-solving model on the change agent in interaction with the user. Finally, R. G. Havelock (61, pp. 9.1–9.41) points out that the dissemination strategies in each model are different. There are one-way

media for information and training in the R and D model, two-way involvement between sender and receiver in the problem-solving model, and a variety of transmission media in the social-interaction model. Figure 12, again derived from R. G. Havelock (61, p. 10.28), enables the three models and the sequence of events in each to be compared.

Overview of Strategies

A strategy, in operational terms, is a set of policies which underly specific tactics or actions that are considered useful in order to bring about the permanent installation of a particular innovation (90). Such a set of policies would have to take into account the innovation itself, the whole process of change, the characteristics of individuals and groups aimed at, and the nature of the system which will adopt the innovation. There exists, needless to say, no single strategy which might be applied to all types of innovation, process, adopting groups or adopting systems. But experience does show, nevertheless, that certain sequences and combinations are more effective than others and it is necessary to meet certain preconditions if any progress is to be made.

G. Watson (157) argues that structural approaches achieve the best results, and that in the schools effective change sequences, in fact, involve structures first, altered interaction processes second, and attitudes last. He further holds that, so long as one maintains the one-teacher-per-classroom model, it will be impossible to create a situation of interdependency and contact which ultimately leads to the diffusion of new practices. The creation of team-teaching units is itself quite a revolutionary structural change; but it has been observed, in addition, that it has effected more changes in the sensitivities and skills of individual teachers than could ever have been achieved through human-relations training, with a teaching staff operating within the closed and self-contained classroom system.

Watson goes on to suggest that all strategies should have equal consideration for the resisting forces in the adopter and for the tactics for effecting adoption. He lists five preconditions for any successful attempt at institutional change:

(1) The participants must feel that the project is essentially their own and not wholly devised by outsiders.
(2) The project must be whole-heartedly supported by the senior officials of the system.
(3) The project must be in reasonably close accord with the values and ideals of the participants.

(4) The participants should experience support, trust, acceptance and confidence in their relations with one another.
(5) The participants must feel assured that their autonomy and security are not in any way threatened.

In projects which are specifically aimed at teachers this final precondition is particularly important, since teachers are likely to reject any proposal which they feel does not fit in with their own style of classroom management.

E. G. Guba has discussed the process of educational innovation (54) and has examined the potential change roles in education. As a result of his investigations he has provided a typology of strategies which are dependent upon the nature of the adopter; his list is, in effect, a collection of different types of motivation and intimidation:

(i) *Value strategy*: The adopter is here viewed as a professional to whom an appeal might be made in terms of value priorities (for example, on behalf of 'what is best for children').
(ii) *Rational strategy*: The adopter can be convinced on the basis of reasoned and logical arguments, as well as of hard data, of the feasibility, utility and effectiveness of the innovation.
(iii) *Didactic strategy*: The adopter is willing although untrained.
(iv) *Psychological strategy*: The adopter has needs for acceptance, involvement and inclusion which may be used to influence him.
(v) *Economic strategy*: The adopter is compensated for agreeing to adopt or is deprived of resources if he refuses.
(vi) *Authority strategy*: The adopter can be compelled by orders which emanate from hierarchical superiors.

Guba goes on to relate each of the above strategies to six diffusion techniques – telling, showing, helping, involving, training and intervening. For example, what ought to be 'told' in relation to a rational strategy (scientific facts) would be different from what should be 'told' with regard to a psychological strategy (experiences). Systems which are decentralised have to rely on the more indirect methods (rational, psychological, value priority) while more centralised systems might use the authority or economic strategies. Guba concludes with the reminder that techniques should be consistent with the strategy they employ – 'There is no point in quoting facts and figures if the only effective way to approach an adopter is to buy him.'

Figure 13 (see 61, p. 10.54) is an attempt to depict the link between the techniques of intervention and the various phases of the change process.

R. Chin and K. D. Benne (27) have reorganised and regrouped these

categories into basic types. It will be noted that these revised clusters correspond more closely to the three processes or process models already
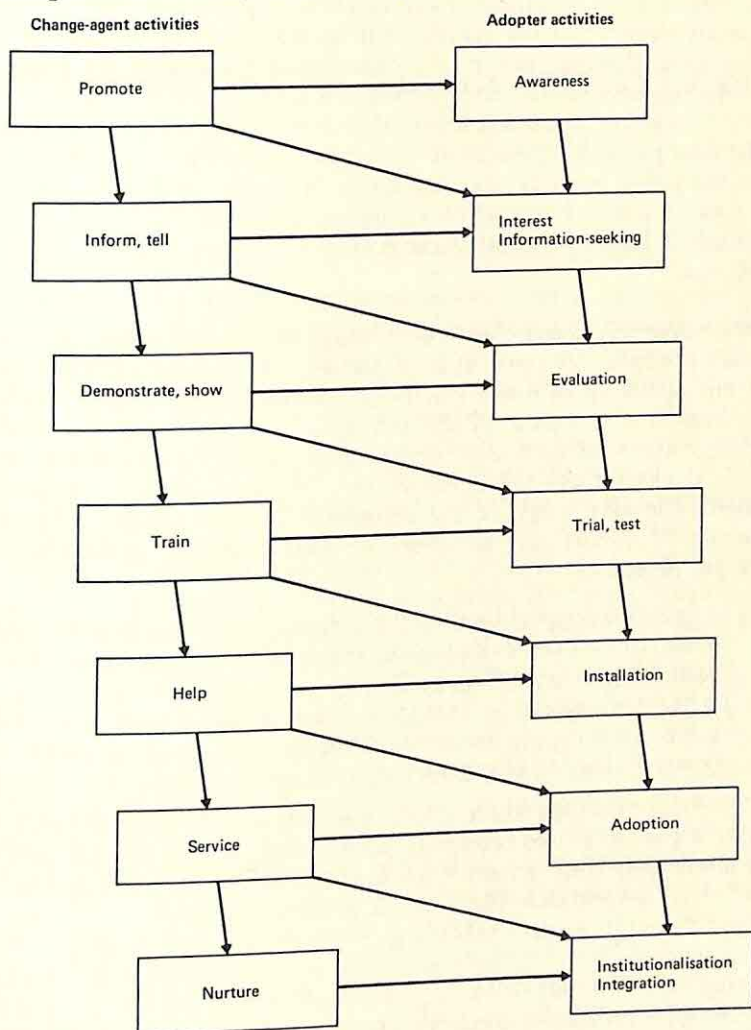
Figure 13
Relationship between Change-Agent Activities and Adopter-Activities

outlined; but it will also be appreciated that they can be referred more specifically to different kinds of ministerial or policy-making traditions.

1 *Empirical-rational approach.* Behind this approach there lies the

assumption that a man is a rational being, and that once his rational self-interest has been demonstrated to him he will pursue it. The innovation, then, will be adopted if it can be rationally justified, and if it can be clearly shown that the adopter will benefit from the change. There is also an underlying assumption that reason determines the process of initiating innovations; and, therefore, that scientific investigation is the best means of extending knowledge, from the initial basic research to the final practical application. This type of strategy is most effective when the public is ready to accept a new invention; and, when difficulties arise, a public information campaign is frequently mounted. The approach is least successful when potential adopters express a strong resistance.

2 *Normative-reëducative approach.* Here the assumption is that the adopter is active, not passive; he is not waiting for solutions from outside but rather he is himself actively searching for a solution to his problems. The strategy itself is based upon a psycho-therapeutic model of change agent (or counsellor) and adopter (or client) in which, with the agent's collaboration, the client is enabled to work out changes for himself. The aim is less in the nature of technical training than the changing of values and attitudes. In such a change there are two principal objectives:

(a) To improve the problem-solving potential of the client or adopting system, in particular the human relationships as these bear on the functioning of the system itself.
(b) To bring self-clarity and personal development to individuals within the system, on the assumption that personal changes will eventually lead to changes in organisation.

3 *Power-coercive approach.* Here the strategy is basically that of employing political and economic sanctions in order to enforce change and innovation. Such an approach becomes necessary when legislation is involved as, for example, when a government desires to enforce a policy of comprehensive schooling (36) (38) (39), or a new system of examinations (98) (99), or a completely revised system of teacher-training (41) (63) (96) (161). It is also the common method of evincing less sweeping reforms in countries where the teaching and administrative staff are expressly hired as civil servants. The making of an order, of course, does not always mean that the decision can or will be carried out. In order that they may be adopted at the personal level, most innovations require fresh knowledge, new skills and attitudes, and frequently new value orientations. At the social level there must be changes in norms, roles and relationships.

Chapter 17

Three Models of How Change Occurs

I. RESEARCH, DEVELOPMENT AND DIFFUSION MODEL

In education the larger number of models and strategies are based upon the transfer from theory to practice. The actual process of change is viewed as an orderly and logical sequence which begins with the identification of a particular problem or the conception of a specific idea, proceeds through the development of possible solutions and prototypes, and ends with the diffusion of the product to a selected target group. Here the major emphasis is upon the *planning* of change on a large scale, for which specialised institutions, such as laboratories, experimental units and research agencies, are required for scientific research, development and rigorous testing and evaluation. For the distribution and installation of the innovation in a target system mechanisms must also be included. The prototypes of this model will be found in industry, defence and agriculture.

R. G. Havelock (61, p. 11.5) has listed the major characteristics in this model in the following way. First of all, the model assumes that development and diffusion should be a rational process, that there should be a *rational sequence* of activities which moves from research to development to packaging before dissemination takes place. Secondly, the model implies that there has to be *planning* on a really massive scale. All these activities of research and development must be co-ordinated and a logical relationship established between them. Thirdly, there must be a *division of labour* and a careful separation of roles and functions. Fourthly, there is an assumption of a more or less clearly defined audience, a specified *passive consumer* willing to accept the innovation if it is delivered on the right channel, in the correct manner, and at the right time. This would be assured by a process of scientific evaluation at every stage of development and dissemination. Finally, this model accepts *high initial development costs* prior to any dissemination activity because it foresees an even greater gain in the long run in terms of efficiency, quality and capacity to reach a mass audience.

Each of the four main steps involved in the model – research, development, diffusion and adoption – is itself subdivided into tasks with specific objectives, criteria and relationships to the overall process of change. The most complex and complete prototype has been provided by E. G. Guba and D. L. Clark, (55), a considerably modified form of which is shown in Figure 14.

It is, of course, true to say that in no country do there exist mechanisms which perform any one of these tasks as comprehensively as suggested above. Moreover, there is a general lack of any sophisticated co-ordinating agency. Research activities in most countries at present are usually performed in universities by graduates carrying out individual rather than common projects; although in England, with the development of the polytechnics as well as the widening of the concept of the function of the colleges of education, a great deal more individual research is beginning to occur in institutions other than traditional universities. There is, however, less *team* research in education, and where such research does exist most activities are theoretical, unidisciplinary, poorly funded, and usually suffering from a shortage of trained personnel. With regard to development E. G. Guba (54) points out that neither researchers nor practitioners are particularly competent to undertake it and that each makes the assumption that the other has the responsibility of devising and designing prototypes. This phase is also particularly expensive; until recent years it had been left to commercial interests, such as publishers and managers, who hired the specialists in the subject-matter and the technologists required for preparing, engineering and packaging new materials. Such agencies as the American Regional Laboratories and the British Nuffield Projects are, however, attempts at the installation of a development capacity within the educational network itself.

The model, however, tends to underestimate the stages of diffusion and adoption through its assumption that the enlightened self-interest of the practitioner will lead to the eventual incorporation of the innovation. In practically all countries there exist, in fact, no agencies apart from commercial salesmen and verbal recommendation for the dissemination of new practices. P. E. Marsh (83), in his study of the American physics curriculum reform, noted the slow rate of adoption owing to the 'materials-centred approach' of the developers, who had no deliberate plan for providing the material for teachers. On the other hand, the mathematics and science programmes, which have been developed by the National Science Foundation, were well disseminated because (a) they were designed as complete units, (b) instructional materials were available, (c) in-service training was offered to the teacher at no cost, (d) the materials could be used by one teacher with-

Figure 14 A Classification Schema of Change Process

	RESEARCH	DEVELOPMENT		DIFFUSION		ADOPTION		
		Innovation	Design	Dissemination	Demonstration	Trial	Installation	Institutionalisation
OBJECTIVE	To advance knowledge	To formulate a new solution to some operating problem(s), i.e. *to innovate*	To order and to systematise the components of the invented solution; to construct an innovation package for institutional use, i.e. *to engineer*	To create widespread awareness of the innovation among practitioners, i.e. *to inform*	To afford an opportunity to examine and assess operating qualities of the innovation, i.e. *to build conviction*	To build familiarity with the innovation and provide a basis for assessing the quality, value, fit, and utility of the innovation in a particular institution, i.e. *to test*	To fit the characteristics of the innovation to the characteristics of the adopting institution, i.e. *to operationalise*	To assimilate the innovation as an integral and accepted component of the system, i.e. *to establish*
CRITERIA	Validity (Internal and External)	Face validity (appropriateness) — Estimated viability — Impact (relative contribution)	Institutional feasibility — Generalisability — Performance	Intelligibility Fidelity — Pervasiveness — Impact (extent to which it affects key targets)	Credibility Convenience — Evidential assessment	Adaptability Feasibility — Action	Effectiveness Efficiency	Continuity Valuation — Support
RELATION TO CHANGE	Provides basis for innovation	Produces the innovation	Engineers and packages the innovation	Informs about the innovation	Builds conviction about the innovation	Tries out the innovation in the context of a particular situation	Operationalises the innovation for use in a specific institution	Establishes the innovation as a part of an ongoing programme; converts it to a 'non-innovation'

out disturbing the work of others (17). The key factor here is manifestly the amount of help available to the teacher at the outset.

It is true that this help often emanates from outside the school system itself, in the guise of a consultant or 'facilitator' who can adapt the device to individual practices. C. Jung (71) speaks of the 'trainer' who can provide *horizontal linking*, that is, ways of communicating with and learning from other teachers and others involved in child socialisation and with the community; or *vertical linking*, that is, access to new materials and to the new techniques of the behavioural sciences which can be useful at the classroom level, such as sociometric tests, counselling, group dynamics and role playing.

H. M. Brickell (17) states that there are three separate processes – design, evaluation and dissemination – which are distinct and irreconcilable; he holds that it is one thing to design a new method of teaching, another to discover whether that new method is any good, and yet another to demonstrate its utility in order to persuade others to adopt it. The circumstances which are right for one process may be wrong for others. The phase of design flourishes in 'enriched and free' circumstances, such as in a task force or an isolated setting. Conditions only rarely allow a group of talented men to be paid and at the same time to concentrate on an invention – the 'think-tank' situation which arises during wartime is one of the rare exceptions. The phase of evaluation, however, requires a controlled and closely observed 'unfree' environment in order to determine what might be accomplished by the innovation under specific conditions. Finally the ideal conditions for dissemination by demonstration are ordinary, unenriched and normal; in other words, they are everyday situations.

Brickell points out that agriculture, industry and medicine have created agencies for each of these functions, whereas education either has never looked at the process as a whole or has invested all these irreconcilable functions in one institution, as for example in a university experimental school 'laboratory'. Brickell proposes the following network: a centralised research agency for the administration of new ideas and projects, teams of temporary programme-design 'task forces', temporary evaluation groups from local universities and, for the dissemination phase, regional development units serving from ten to twenty school systems and providing demonstration facilities and teacher training, with confirmed monitoring after the installation of the innovation.

One sophisticated example of the model under discussion is that of Research for Better Schools (RBS), an agency which is responsible for the implementation and field testing of an individually paced mathematics programme at the level of the primary school. The basic research

and development of prototypes for evaluation is performed at the Learning Research and Development Centre of the University of Pittsburg, whilst the resultant materials are mass-produced by a commercial publishing firm. When the materials have been developed at the university, RBS enters into an agreement with a number of school districts for preliminary diffusion; thus the research–invention–design phase is followed by the dissemination–demonstration–trial cycle of the model. There is provison made for the training of staff; 'monitoring engineers' are sent into the adopting districts to supervise in-service training and demonstration activities, and the preliminary evaluation is made. As the teachers begin to experiment with the new materials the adoption phase (installation-institutionalisation) proceeds via 'controlled participation'. It also involves further training of administrators and supporting staff as well as a continual monitoring of the new programme of work through regular visits over an agreed period of time. Once the laboratory phase is over, widespread dissemination is sought through a similar sequence, assisted by the mass production of the instructional materials.

II. SOCIAL-INTERACTION MODEL

In this second model the unit of analysis is the individual receiver, and the focus is on the receiver's perception of and response to knowledge emanating from outside. Studies in this particular area have revealed that the most effective means of disseminating information concerning any innovation is that of personal contact. Thus the key to adoption is the social interaction among members of the adopting group (61, pp. 10.12–10.14). Generally, researchers concentrate on an innovation that appears in a form that is both concrete and diffusable (audio-visual aids, new curricula, textbooks, teaching machines, packaged materials), and they trace its flow through the social system of the adopters. In particular, they make a study of the effects of social structure and social relationships on innovations and their development.

Research has demonstrated fairly conclusively that all individuals go through the same adoption sequence (see Figure 7, p. 74). Their cumulative involvement may be characterised as follows (128, pp. 100–1):

1 *Awareness.* In this initial stage the individual is exposed to the innovation, but he is lacking in complete information about it, or he may not be motivated to seek any further information. He is generally passive in that awareness does not usually come about as the result of a need, but rather it creates a need for the innovation. This is a sound psy-

chological principle in all advertising in a world in which, basically, our survival needs are really few in number. As we are made increasingly aware, through the mass media, of a great variety of fringe benefits to be derived from labour-saving devices, electronic marvels, status-providing innovations, novelties and cute inventions, we discover through our new-created awareness a need for things and services concerning which we knew nothing before. Thus an individual may develop a need when he learns that an improved method or innovation exists, so that innovations do lead to needs as well as vice versa.

2 *Interest.* During the interest stage the individual seeks information concerning the innovation, but has not yet judged its utility in terms of his own situation. The function of this stage is mainly to increase the individual's information concerning the innovation. As the individual's behaviour becomes purposive in seeking information his psychological involvement increases. This active search for information implies some degree of personal commitment, however small, and it may well presage later phases more likely to result in adoption.

3 *Evaluation.* This stage may be referred to as one of 'mental trial', in which the individual applies the innovation to his present and anticipated situation, and then decides whether or not he will try it. What is essential here, in terms of education, is whether in fact the teacher is authorised to try out a new device or practice. In the case of highly centralised systems this is seldom so.

4 *Trial.* If the individual finds that his 'mental trial' is favourable, he may decide to move on to the trial stage and use the innovation on a limited scale in order to discover whether, in his own restricted situation, it has any real utility. The main function of this stage is to demonstrate the new idea in the person's own situation and further to determine its usefulness for possible complete adoption. This is a very important and critical phase since what may be successful, or even useful in one milieu may not necessarily be so in another. In the context of education, the discipline of comparative education has revealed that many quite successful educational experiments and innovations are non-transferable, or at least they cannot be successfully transferred without some modifications.

5 *Adoption.* The results of the trial of the innovation, or of some modification of it, are then considered in some detail, after which the decision is finally made whether to adopt or to reject the innovation. If the innovation is adopted it becomes increasingly internalised and

routinised – in fact, an accepted and automatic part of the adopter's behaviour.

At each stage in the process, the potential adopter will usually turn to different sources of information, which may be personal or impersonal, the latter referring to various types of media (print and non-print). The media tend to play a major role during the stages of awareness and interest, whilst during the final stages of evaluation, trial and adoption, personal sources tend to predominate. In certain medical and rural sociology studies it has been established that media and commercial sources were the first to bring news of an innovation, but that colleagues, friends and professional sources were required to legitimate decisions concerning adoption or rejection.

Such studies also revealed that early adopters (or 'influentials') greatly affect and influence later adopters (127, pp. 58–9). The early adopters may be cosmopolites who have read more widely, travelled extensively, had more contact with experts and innovators, and are generally educated to a higher level. Some early adopters may be senior administrators who are in a position to enforce compliance through formal leadership; whilst others may be 'opinion leaders' whose advice is valued, or 'gatekeepers' (61, pp. 7.10–11) who are the informal leaders in a system (such as chairman of a teachers' union, head of a clique of senior teachers, committee chairman or inspector), and who are in a position to help or hinder the adoption of a new idea or practice. A strategy to introduce a given change to members of a social system is illustrated in Figure 15.

In all cases the key feature is the relation of the leader to the group. Psychologists (77) (78) have demonstrated that identification in a group and with a leader plays an important part in the diffusion of new ideas, since people will adopt and sustain attitudes and behaviours which they have already associated with their 'reference' group. It is likely that innovators will be found in a greater variety and number of such reference groups and, as cosmopolites, they will be able to see personal relevance in both things and ideas which their neighbours are much more likely to perceive as alien and hostile. Any society which has large numbers of individuals who maintain diverse and overlapping group identifications will tend to be innovative (61, pp. 2.34–2.36; 6.33–6.34; 7.11–7.13).

III. PROBLEM-SOLVING MODEL

Although, of course, he will generally turn to outside sources for guidance it is the receiver who has to resolve the problems. Either the

change agent or the receiver may initiate the change process, but in either case the receiver must desire to change and must fully participate in effecting the change (61, pp. 2.40–2.41; 10.53–10.70). The teacher
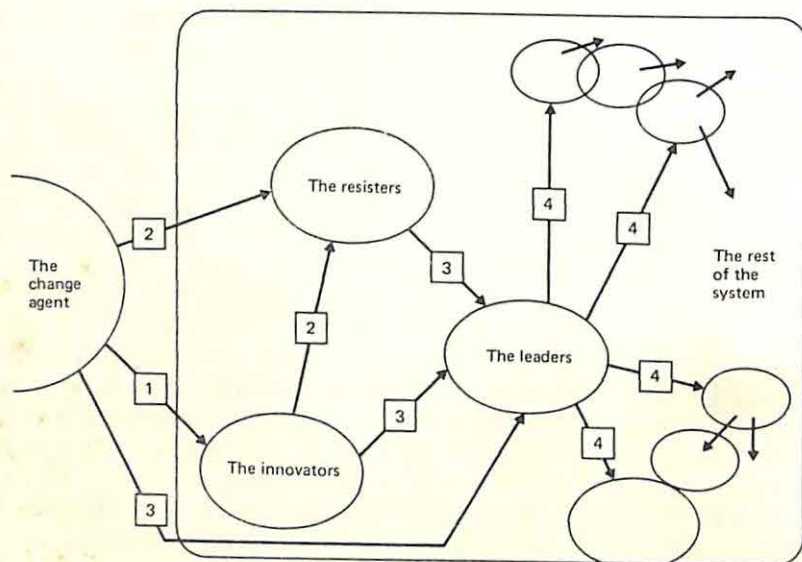
Figure 15 *A 'Stepping Stone' Strategy for Gaining Group Acceptance*

who needs assistance in measuring the effectiveness of different types of classroom management, the administrator who wants to look at both the advantages and disadvantages of non-streaming or non-grading, the teaching team which is having trouble in collaborating – all may be assumed through the same cycle of problem-solving. Figure 16 illustrates the cycle of problem-solving (61, p. 2.41).

Should the school require the services of an outsider, that is, of an external consultant, the diagram must be extended as in Figure 17 (61, p. 11.12). The user's need is of paramount importance and diagnosis is part of the process; the outsider is a catalyst consultant or collaborator, but the user must find the solution himself or at least see it as his own, and he must utilise all internal resources before searching outside.

The basic properties of the problem-solving approach may be synthesised into the following five points (61, pp. 11.13–11.15):

1 *The user is the starting place.* It is important to recognise that the social-interaction model is both inconclusive and potentially irrespon-
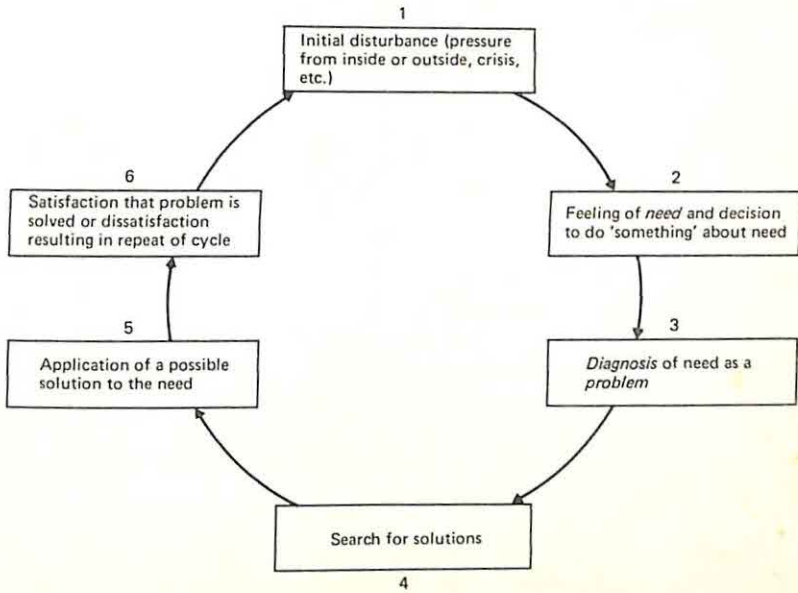
Figure 16 *Cycle of Problem-Solving*
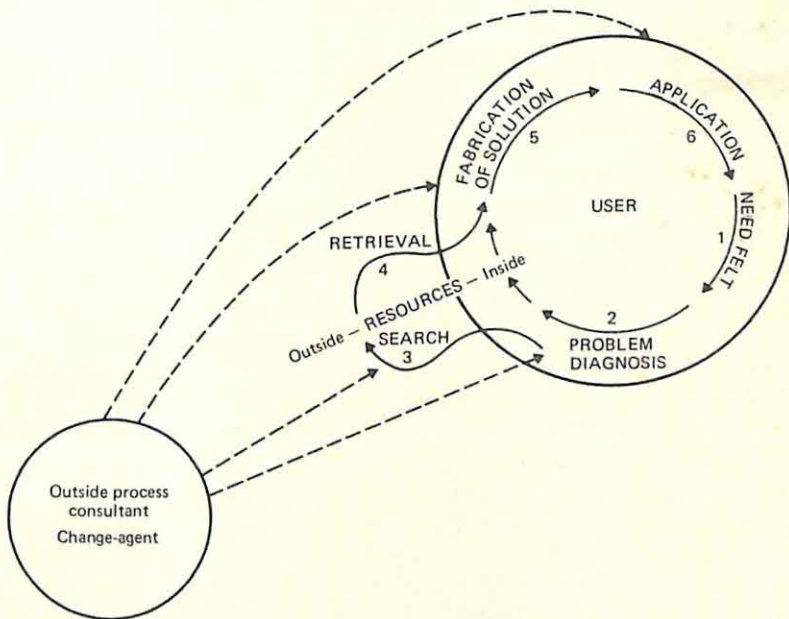
Figure 17 *The Problem-Solver Perspective*

sible, since researchers in this field are usually indifferent to the ultimate fate of an innovation. For them the process ends when the target audience has accepted or 'bought' the innovation, without further investigating the durability or depth of the adoption. Then, the social-interaction model is manipulative; there is very little concern for the consumer's real needs or circumstances, nor for the possibility that the innovation might be meaningless or harmful to him.

2 *Diagnosis precedes the identification of solutions.* The model is a highly clinical one which has a strong emphasis on the user and his world, and in which the more deeply seated are sought beneath the manifest symptoms. Most are concerned with difficulties of communication and interpersonal relationships, which explains the emphasis in the problem-solving perspective on human-relations training. The organisation is conceived as a network of groups and relationships whose functioning must be studied introspectively rather than technocratically by means of expert recommendations.

3 *The outside helping role is non-directive.* The change agent or outside helper has a specialised role, but he does not take over the problem-solving for the client. Rather he provides the client system with guidance and training in how to do its own problem-solving. The outside expert may be able to introduce certain relevant kinds of knowledge to the user, as well as useful insights and recommendations; but he should be a non-directive consultant, advising and helping on the process more than on the content, whilst encouraging the user to perform his own diagnosis, retrieval and application work for himself.

4 *The importance of internal resources is recognised.* In our emphasis upon innovations as new ideas and artefacts brought into a system, we are inclined to forget the fact that most users are already making less than satisfactory use of what they already know and have within easy access. 'This home-grown and home-stored knowledge is probably going to be more relevant and more suitable for the solution of the problem at hand than the imported knowledge would be' (61, p. 11.14).

5 *User-initiated change is the strongest.* The basic argument against changes which are imposed by external authorities, imported by outside experts or handed down by chief administrators is that they possess a very weak motivational foundation for the user and the least prospects for long-term survival. It is essential that the user must not only accept the innovation but also internalise it as well. As R. G. Havelock (61, p. 11.14) remarks, 'The user will be more likely to internalize an innova-

tion that he sees as *his own*, something that he has accepted by his *own free and deliberate choice* to meet his *own specific need*, and something that he has worked on himself to *adapt* to his own specific need.'

The thesis of internal motivation is frequently employed in the literature on change to legitimise participation, that is, the active involvement of individuals who are affected by decisions in the decision-making process. Literature on social change (106, chapter 4) has shown that people generally accept innovations more readily if they understand them, regard them as relevant to their particular situation, and also help to plan them. The process is often accelerated by using group cohesiveness as a catalyst. Consensus is more strongly established in each member by the fact that a group makes a decision or a commitment, while at the same time the interaction among members improves communications or leads to greater interdependence in the system at large. Some studies (61, pp. 6.33; 9.29–9.31) reveal that teachers' participation in the policy-making process of the school has led to less alienation, a greater sharing of ideas, possibly better teaching and greater receptivity to change. Researchers in other social science fields also appear to indicate that individuals who are socially integrated into peer group structures, without being driven to conformism, are more innovative and generally more receptive to new ideas. As far as teachers are concerned, most of the literature suggests that the innovators in their midst tend to operate neither alone nor in large groups, but in groups of two or three, generally in pairs having similar background and status.

When we examine the techniques involved within the user system, as employed by change agents, we note that they vary from large-scale operations (conferences, games, *ad hoc* task forces, personnel assessment programmes, demonstrations) to more intensive group-dynamics work similar to psychotherapy and counselling. The objective is usually twofold: to 'unlearn' or re-educate the individual and group attitudes which were responsible for the appearance of the problem in the first place; and to 'educate' or add new knowledge, skills, attitudes and practices.

In the majority of the techniques used, the participants are placed in free environments, sometimes in reclusion, in which they are able to experiment with new roles and relationships, and in conditions which are controllable and risk-free. In such circumstances as these there is a tendency for the participants to become more open and direct with one another. They soon begin to discuss common problems in such a way as to release long-held misunderstandings, resentments, condemnation, prejudices and false information. Such elements as rank and

status are minimised, and members begin to relate to the group as a whole and to other individual members with less suspicion. The basic principle is that increasing communication in free surroundings will bring people to view one another in a more objective manner, and also will lead them to co-operate much more readily. In very few countries, however, are such procedures and techniques in use or perhaps even conceivable, because of the patterns of social interaction which have been accepted between colleagues or between members of different levels of an administrative hierarchy. M. B. Miles (91, pp. 28–30) has singled out *six interaction techniques* which are appropriate to education.

1 *Team training.* Here the members of a normal work group, such as the school headmaster and his heads of departments, meet for a period of several days away from their offices and classrooms, with consultant help. They analyse their own effectiveness as a problem-solving team, the role of each individual within the group and the way in which it affects both the group and the individual himself, and the operations of the group in relation to its organisational environment. In such circumstances as these, the members usually improve their ability to express their feelings directly, and to listen to as well as understand one another. Both communication adequacy and the successful management of internal conflicts are thereby increased.

2 *Survey feedback.* Data which have some bearing upon the beliefs, opinions and attitudes of members of the system are collated through questionnaires. Each work group, assisted by the consultant, will then examine its own summarised data and compare its results with those for the organisation as a whole. The exercise of looking in a relatively objective manner at data which refer to personal attitudes, will help to reduce feelings of being misunderstood or isolated; moreover, it will also put problems in a framework where they can be dealt with, rather than retaining them for blaming or scapegoating others or oneself. This approach is being increasingly employed in the attempt to improve teacher–administrator relations.

3 *Role workshop.* This intervention involves all the people in a particular role (such as, primary school headmaster), and is often referred to as the 'horizontal slice' meeting. They fill out research instruments which deal with role expectations that various others hold for them, the 'fit' between their own aims and these expectations, and their actual role performance. These data, when summarised, form the vehicle for a series of activities which include discussions, decision-making exercises, role practice and problem-solving. The main emphasis in such a

role workshop is upon role clarity, effectiveness, and the improvement of the 'fit' between the person and the role.

4 *Target setting and supporting activities.* Here there occur periodic meetings between a superior and each of his subordinates separately. In any particular school system this might involve, for example, the headmaster and his teaching staff. The work of each subordinate is reviewed in relation to goals which are both personal and organisational, and the superior and the subordinate will eventually agree, in a collaborative manner, upon new targets for the subordinate's personal work and development. After a period of time, say six months, these 'targets' are reviewed. But in the meantime, the subordinate will have engaged in consultations, role workshops, academic courses, and self-operated data collection in order to develop the necessary skills and understanding as he works towards the newly agreed targets. Here attention is focused upon the working relationship between the superior and the subordinate.

5 *Organisational diagnosis and problem-solving.* Here the entire adult personnel of a school will meet for several days to identify problems, discuss the reasons for their existence, decide on requisite changes, and plan the implementation of these changes through both regular and newly-constructed channels. These new targets are reviewed periodically, and the main objective is to strengthen communications, group cohesiveness and problem-solving activity.

6 *Organisational experiment.* This is a variation of the previous model in which the members carry out a controlled experiment, complete with before and after testing and the use of control groups. This approach normally includes a feedback stage in which the results are carefully checked and examined and implications are finally drawn for the more efficient functioning of the school.

M. B. Miles (89) has noted that many of these techniques set off an attitude cycle among the participants. At first, members have a tendency to be on the defensive and to be formal with one another, each individual withdraws and is reluctant to enter the system as a full member until he can be certain of his psychological safety. Next an atmosphere of play sets in. With the use of role-playing and other types of self-awareness techniques, the individual comes to trust others and is less anxious about the possibility of their rejecting him. At the same time he becomes less self-critical and enters more wholeheartedly into the spirit of the undertaking. Then, members begin to move in the direction

of more interpersonal relationships – linking, acceptance and intimacy – which shades into a shared sentiment of group identity, or *esprit de corps*, as the participants become convinced that their relationships and responsibilities are meaningful.

Finally, there is a feeling of complete involvement or engagement in the goals of the system. The standards and norms of the group become internalised in the individual members. These norms may be characterised by such abstractions as equalitarianism, authenticity (openness and trust between members), inquiry, innovativeness (favouring novelty and innovation), and 'effortfulness' (that is, a higher output of energy, work and effort). Thus, the personal changes reinforce both relationship changes and the sentiment of group protection which proves to be of vital importance during the total process of installing the innovation.

One of the most ambitious undertakings which make use of the problem-solving approach is the American Cooperative Project for Educational Development (COPED) (64, pp. 19–25). This is an inter-institutional effort to conceptualise, develop and study models of planned change in schools, and it comprises a consortium of eight universities working in five regions and involving some twenty-five representative school systems. The network is co-ordinated by the National Training Laboratories of the National Educational Association. The goal of COPED is the growth, within these school systems, of self-renewing research and development functions to meet critically the needs of change. The change-agent teams hold seminars, lead task forces and collaborate with the selected schools in implementing innovations and improving skills of problem-solving among the staffs. At the same time, successful strategies and assessment instruments are devised in order the better to monitor and accelerate the whole process of planned change in each of the participating schools.

In all these operations there is a suggestion of *social engineering*, that is, there exists an assumption that an external group will decide in advance upon the type and manner of reform required inside the education system, and will proceed to install the innovation by means of a sophisticated manipulation of the potential adopters. There is an analysis of the target environment in terms of predicted or probable responses to the proposed innovation, and a number of suitable reinforcement patterns and rewards are planned in order to ensure success. There is behind the whole process of such social engineering and designing an assumption that the staff must understand the innovation, its requirements and its relation to the general objectives of the school; but the actual strategy itself clearly demonstrates that the school personnel are regarded as passive rather than active instruments in their own restructuring.

In his discussion on the installation of an innovation, L. Rubin (130) lists the steps of such strategy as:

(i) the analysis of the innovation's requirements in training, materials and linkage to existing systems;
(ii) the initiation of motivating pressures through inducing dissatisfaction and illuminating the rewards;
(iii) the initiation of the influence strategy;
(iv) the initiation of preparatory activities;
(v) the installation of this innovation.

THE CHOICE OF MODELS OR STRATEGIES

We have outlined three main models or strategies employed in the development of educational change, and each of these models illuminates one perspective of the innovative process, suggesting at the same time possible techniques for the acceleration of change. The research and development (R and D) model concentrates more specifically upon the *origins* of the innovation, the problem-solving model upon the *dynamics* of individual adoption, and the social-interaction model upon *wide diffusion* throughout an educational system. The R and D model reveals the fact that we lack the institutional structures for the design and development of new ideas and materials. The problem-solving model demonstrates the paucity of processes for implementing changes once we have decided to undertake them. And the social-interaction model displays the fact that we have few vehicles for the dissemination of any particular innovation to a larger public. Up to the present time none of the models has been fully developed in practice nor has there been any successful attempt to combine all three approaches into a general paradigm.

As might be expected, the different national systems of education have different methods of organising and harnessing the innovation process. Some operate with centralised research and diffusion bureaux (e.g., France, Poland, Norway); others rely much more strongly upon semi-autonomous agencies (e.g. USA, United Kingdom). Some countries have attempted to design all materials locally; others try to adapt new practices and equipment from abroad to their own local conditions. It is clear that in any strategy of change provision should be made for all of the three operations of (a) research and development, (b) vehicles for the introduction of change within a single institution, and (c) mechanisms for spreading innovations throughout the system. The particular techniques, however, and their sequence of adoption will inevitably vary from one country to another. The important factor

appears to be the creation of mechanisms beyond those required to operate the education system; there is the need to establish new agents in the environment in order that they may accelerate and supervise the different phases of the process.

Chapter 18

Some Current Educational Innovations

The main areas of educational innovation in the world's societies today are in terms of school systems and forms of organisations, developments in further and higher education, methods of teaching and learning, curriculum development and research. It would be very convenient to separate these elements out so that one could deal with each development in isolation, but any discussion of system organisation leads to a consideration of method; method is inseparable from curriculum content, and both are the subject of research. It is, however, desirable to attempt to deal with educational innovations in some sort of sequence, and we have, therefore, brought our main considerations under the four headings of organisation, curriculum, method and research. The following account is necessarily both selective and partial, since nothing short of a book on the subject could possibly deal with it in all its aspects. The main aim of the chapter is to indicate the sort of changes that are taking place and the extent to which they are local or general.

A. EDUCATIONAL SYSTEMS AND ORGANISATION

One recognises that the institution must reflect, almost inevitably, the sort of society in which it exists. When one argues against a particular form of institution one is frequently arguing against the type of society in which one lives. Society tends to produce the institutions which serve it best, and when they cease to render the required service they tend to be modified or substituted by something else.

A study of comparative education, however, soon reveals that whilst

societies do change in this way from within, there are also external processes which invite them to compare themselves with other societies, their success, and the reasons for their success. In this way, one country or government will frequently adopt and develop the inventions and changes of other societies on the basis that what has worked for them should work for us. It is not always as blatant as this, but effectually this is often the basis for the adoption of something new. In terms of education and the interpersonal relations bound up with any educational system, this can be very dangerous. People are not things, nor can they be modified as things without considerable damage to their personal freedom and to society at large. It is, however, not our purpose to make judgements upon innovations in this present chapter, but simply to point out and to refer to current literature for further information.

1 *Schools*

The school and its nature as an institution have come under fire since the Second World War, and both primary and secondary education have been subject to considerable change (104, chapters 2–4). Before the war even the concepts of 'primary' and 'secondary' were novel in our society, (14, p. 95), and the idea of developing secondary education into a variety of forms to include 'modern', 'technical' and 'grammar' (16, pp. xvii–xxxviii) was regarded as somewhat revolutionary. The 1944 Education Act and the introduction of Eleven-plus Selection were the beginning of a considerable variety of forms of institution. Not every authority was happy with the division of children into three, or more commonly two, types. Inded the Ministry of Education, under the direction of Ellen Wilkinson, supported the concept of variety rather than uniformity:

'The Minister desires to lay down no set guides for organization but to encourage local authorities to plan as best suits their local needs. In some places where conditions are favourable the best way of carrying out the new plan may be to combine two, or three, types of secondary education in one school . . . There is, indeed, no end to the possible varieties of organization; the system must be flexible and experiments of many kinds are to be welcomed. The only proviso that must always be observed is that the real interests of the children must come first' (95, p. 24).

This provided a very liberal context for the development of secondary education, and the only thing to be avoided was rigidity and stereotyping in secondary education. By 1958 local education authorities had so much taken this view of their autonomy to heart that, in England, there

were sixty-one comprehensive schools with 15,027 pupils already in existence and forty-five bilateral schools with 7,423 pupils of the same age; that is about 3·3 per cent of the pupils aged thirteen were either in comprehensive or bilateral schools (97, pp. 23–4). Since that date the comprehensive school has grown apace, under alternate pressure from the Labour government and relaxation by the Conservative rule. Whilst amongst educationists the comprehensive school has always had its protagonists (118), it has equally had its strong opponents, not least among those teaching in state grammar schools, in direct grant grammar schools, and in the great variety of independent, private and public schools.

Warning notes have also been sounded by those who have experienced the comprehensive system in other societies. Professor I. L. Kandel (72, pp. 110–14) attacked some of the assumptions of those who supported the comprehensive school, and suggested that many of the arguments in its favour were inspired by political and social motives as well as doctrinaire assumptions based on information about American high schools which was unverifiable. Kandel argued that both the choice of courses in such high schools, whether such courses were general, vocational or academic, as well as student participation in extra-curricular activities, were frequently influenced and determined by social status; and he felt very strongly that social stratification was in fact perpetuated in the high school despite the artificially-contrived identity of environment within it. But, just as it can be argued that what has succeeded elsewhere will not necessarily succeed here, so also it can be argued that what has failed elsewhere will not necessarily fail here. The birth-pangs of a new educational system are likely to produce a great number of problems which neither were envisaged nor can be immediately solved. The period of evaluation has inevitably to be a long one.

In the meantime, however, other innovations have occurred within school systems. There has been the encouragement and development of nursery education, in particular, since the publication of the Plowden Report (37, Part 4). The report insisted that there ought to be a large expansion of nursery education, and that the entry into the infant school should be gradual between the ages of three years and five years via part-time attendance. It was felt that these were ways of reducing the social and economic deprivation of the home background which, in turn, resulted in inequalities of capacity to deal with the educational system at the age of five (152, p. 55). Provision for nursery education has never reached the level of demand, particularly in those areas where virtually all married women who are able, participate in the work of our society.

Another innovation within our school system has been the introduction of the middle school. It is perhaps interesting to note, in passing, that from the time of the report of the Cross Commission (1888) until the end of the nineteenth century many school boards were grading their elementary schools into junior, middle and senior departments. In recent years some LEAs have developed the middle school which links or straddles the primary and secondary stages. The arguments for its existence vary, as do the age ranges with which it deals, but in general terms it is felt that it gives to the first, or infant, school a more realistic function and identity, delaying transfer to the middle school until at least the age of eight years, and so providing a more solid and integrated course before the child proceeds to the next stage.

By accident, rather than by planning and design, there has developed in our society the multi-racial school. There are schools with a majority of whites, others with a majority of coloured children; but increasingly there are areas in our society where the multi-racial school is, in effect, an innovation. In their interesting discussion of *The Multi-Racial School* Julian McNeal and Margaret Rogers have considered the developing nature of such a school and their hopes for its possibilities in the future:

'What was once the function of the village clergyman or the doctor has now, it seems, become the task of the schoolteacher. In this way the parents are asking for school to have a central function in their lives, and since we, too, are hoping that one day the school will become a community school, the least we can do is to try to come up to their expectations' (82, p. 69).

This concept of the community school is certainly not a new one. As far back as 1928 the first village college in the country was built at Sawston in Cambridgeshire mainly through the energy and imagination of Mr Henry Morris, the Education Secretary of the Cambridgeshire County Council (120). It was essentially the realisation of a vision of a planned community. The village college aimed at bringing the whole life of the village, or of a group of villagers, into one focal point. Here the children would attend day school; the adults would listen to evening lectures, youths would participate in dramatic productions, sports and dances; young women would learn the art of cookery and housewifery; the old would rest in the reading rooms with books borrowed from the lending library; and all would pursue their interests, hobbies and a variety of leisure activities together.

In more recent years the community concept has been developed in a variety of ways. C. and M. Ball suggest that the true community

should not merely provide an education for the whole community, 'it must provide a whole range of services for the community, services based on truly relevant and practical education' (5, p. 12). In this atmosphere of community there would be a place for tutors from all professions, not necessarily trained teachers. There is also a plea for the fullest possible utilisation of all school buildings as well as all the local facilities, including clinics, libraries, nurseries etc., etc. In the words of Henry Morris (102), 'we must institutionalize our places of education so that they become centres of corporate life, and not a congeries of classrooms for discourse and instruction'. In his concept of *Priority Education*, E. Midwinter (86) has described the community school in the Liverpool Project. He argues that education cannot compensate for the malpractices and injustices of society;

'The Community needs to be changed and thus the Community School has to be involved in changing and not in standing still. Teachers will have to become social prosecutors rather than social defenders, if the school is, in effect, to shift itself massively and become a positive influence on social change' (86, p. 23).

But there is a growing feeling among some social thinkers and educationists that the school as an institution has a deleterious effect; that, in fact, it is a form of compulsory miseducation. P. Goodman claims that 'with less literacy, there would be more folk culture' (50, p. 26). He suggests that there are viable alternatives to schooling:

(i) To have no school at all 'for a few classes'.
(ii) To dispense with the school building for a few classes; provide teachers and use the city itself as the school – its streets, cafeterias, stores, movies, museums, parks and factories.
(iii) To use, both inside and outside the school building, appropriate *unlicensed* adults of the community.
(iv) To make class attendance not compulsory.
(v) To decentralise an urban school into small units.
(vi) To use a pro rata of the school money to send children to economically marginal farms for two months of the year.

The story of the first street school in New York's lower East Side is told with compassion by G. Dennison (35), and that of thirty-six black twelve-year-olds in New York's Harlem by H. Kohl (74) who taught the unteachables to whom school was an irrelevance, 'to be treated sometimes with humour, sometimes with lethargy, sometimes with dull, impotent, insolent anger'. Then there is (or was) the famous School of

Barbiana (146), Barbiana being the name of a community of about twenty farmhouses in the hills of the Mugello region of Tuscany. The argument here was that children became different in their attitudes to learning because of their home environment after school hours. There was, therefore, a need for a *doposcuola* or 'after-hours school' which had to create a comparable environment for all the children, whilst keeping alive their own cultures. The reforms necessary in schooling were expressed in three dicta (146, p. 69):

(1) Do not fail students.
(2) Give a full-time school to children who seem stupid.
(3) Give a purpose to the lazy.

Ideas with regard to change in the institution of the school range from alterations in nomenclature, methods of selection and reform of the existing state schools generally in order to provide more 'equalization of educational opportunity' and 'education for democracy' (131), to a partial or total abandonment of compulsory education in its present form. Ivan Illich (68) and Everett Reimer (122) have argued very vigorously for the disestablishment of the school in society. They assert that 'school has become the universal church of a technological society' (122, p. 19), a sort of 'sacred cow', with all the vested interests that become attached to any form of institutionalisation. Illich and Reimer feel that universal education through schooling is not feasible; but it would be more feasible if it were attempted by means of alternative institutions. Illich speaks of the various educational 'myths' – the myth of institutionalised values, the myth of the measurement of values, the myth of packaging values and the myth of self-perpetuating progress.

'School programmes hunger for progressive intake of instruction, but even if the hunger leads to steady absorption, it never yields the joy of knowing something to one's satisfaction. Each subject comes packaged with the instruction to go on consuming one 'offering' after another, and last year's wrapping is always obsolete for this year's consumer' (68, pp. 47–8).

There are, Illich argues, *manipulative* forms of institution which organise production, and which are coercive; and he does not hesitate to link the military, jails and schools in this connection. But education should be a facilitating activity, involving 'convivial' institutions. Illich goes on to suggest what it is that makes it possible for members of society to live and work together in a convivial atmosphere, and offers

a series of 'networks' in place of the conventional school institution (68, pp. 80–1). Such networks include (a) reference services to educational objects; (b) skill exchanges; (c) peer-matching and (d) reference services to educators-at-large. These networks would facilitate access to things or processes used for formal learning; they would permit individuals to list their skills and the conditions under which they might be willing to serve as models for others who wish to learn such skills; they would provide means of communication whereby persons might specify the learning activity in which they wish to engage, in the hope of finding a 'peer' or partner for the enquiry; and they would facilitate communication with and access to the services of professionals, para-professionals and freelancers. In this way one might avoid the situation described by Charles Schulz in his cartoons on *Peanuts*:

'I learned something in school today.

'I signed up for folk guitar, computer programming, stained-glass art, shoemaking and a natural goods workshop.

'I got spelling, History, Arithmetic and two study periods.

'So what did you learn?

'I learned that what you sign up for and what you get are two different things.'

For further accounts of deschooling, free-schooling and reschooling the reader is recommended to read W. K. Richmond's *The Free School* (125), A. S. Neill's *Summerhill* (111) and R. Hemmings' *Fifty Years of Freedom* (62). The literature on the subject has now become vast, and through the Penguin publications a lot of it has also become generally available.

2 *Colleges, universities and the education of adults*
P. Freire (46) has popularised the concept of *conscientisation*, by which he means the process in which men learn to perceive (not as recipients, but as knowing subjects) social, political and economic contradictions, and to take action against the oppressive elements of the socio-cultural reality. The education of illiterate adults, particularly in the Third World, he regarded as cultural action for freedom (47). In order to avoid a species of 'sclerotic bureaucracy' men had to regard revolution as a natural and permanent dimension of man's world, 'a continuous event'. This could be achieved only through dialogue, for men educate one another through the mediation of the world. In his attempt to give literacy to adult workers in South America Freire argued that literacy was strongly linked with praxis; language and activity went together, and workers became literate much more quickly if the problems of

literacy became identified with those of politics, economics, workers' unions and so forth. The success or otherwise of adult literacy programmes in Iran (2) India, Pakistan, and Bangla Desh (105, chapters 9, 14) is a measure of the extent to which those programmes have been linked, in an active manner, with the daily work of the people. 'Dialogue is the encounter between men, mediated by the world, in order to name the world' (46, p. 61). Freire's view is that real education is concerned both with men's personal relationships and with the 'restless, impatient, continuing, hopeful inquiry' which men pursue in the world, with the world, and with each other.

Society has suddenly begun to see the importance of the continuity of education and of recurrent education (66). Adult literacy is but one element in this view of life-long education, although, of course, it represents a vital element in some societies. In our own society we have seen during the past decade a vast reorganisation, if not a revolution, in our system of higher education. The Robbins Report (101) reviewed the pattern of full-time higher education in Great Britain and suggested new types of institution as well as modifications which should be made in the current arrangements for planning and co-ordinating the development of the various types of institution. Colleges of advanced technology were to become technological universities with power to grant both first and higher degrees; there was to be an expansion of existing universities, both in the number of universities themselves and in the total number of places available for undergraduates.

Teacher training in England and Wales has undergone considerable change, innovation and invention. The two-year teacher-training course was augmented to three years, beginning in 1960 (96). There followed an expansion of the colleges, which came to be known as colleges of education, and which, under the auspices of University Schools and Institutes of Education, were given the power to teach for the Bachelor of Education degree which had to be taken over a period of four years – inclusive of certification for teaching. Subsequent to the publication of the James Report (40) and the White Paper entitled *Education: A Framework for Expansion* (41) there has begun to occur a recession in teacher training so that, far from making an attempt to fulfil the prediction of the Robbins Report that by 1980/1 there should be about 145,000 places for intending teachers in colleges of education (101, pp. 107–25), there is now a policy to reduce both the number of colleges and the number of students. Some colleges are disappearing altogether, some are amalgamating, others appear to be linking up in some new form of federation with either university or polytechnic. The teacher-training bonanza seems to be temporarily over, but a new pattern is likely to emerge as a result of the recession. There will eventu-

ally be a three-year B.Ed. degree replacing the three-year certificate in an attempt to establish the teaching profession as an all-graduate one. In addition there will also be available a variety of first degrees designed specifically for teachers-in-training. At some universities there will be new degrees in Arts and Science faculties; at London University there will be the degree of Bachelor of Humanities to be awarded only to teachers-in-training.

One of the innovative phenomena in our time has been the emergence, perhaps the resurrection in revised form, of the polytechnic (160). When the colleges of advanced technology had been transferred to the university sector of Education, the National Advisory Council on Education for Industry and Commerce (NACEIC) emphasised the pressing need for the further concentration of courses in order to achieve the most effective utilisation of resources. The White Paper published in 1966 (160) noted the rapidly increasing demand for higher education within the further education system, and the fact that the existing government believed that the demand could best be met by establishing a limited number of new, strong centres with adequate staffing, buildings and equipment 'needed both to achieve and maintain high standards and to provide the right setting for an active community of staff and students' (160, p. 3).

It was considered that the best results could be established by creating about thirty polytechnics which would be comprehensive communities catering for students at all levels of higher education. The gradual establishment of these institutions during the ensuing years has resulted in the provision of an alternative to the university for students who wish to take degrees which are either London University External or those which have been approved by the Council for National Academic Awards (CNAA). There can be little doubt that the Council represents one of the strongest and most progressive academic forces in our society for the development of higher education, not only in the more conventional fields of science, arts, technology and engineering, but also in business studies, architecture, social science, economics, languages, law, divinity, librarianship, public administration, education and many other areas. Its range is limited only by the inventiveness and ingenuity of the staffs of the colleges concerned and the general viability, acceptability and academic respectability of the courses planned.

One of the great innovations of our time, the full impact of which has not yet been evaluated, is that of the Open University. The Planning Committee, in its report (115) maintained that the greatest educational opportunity was being denied to the greatest number of citizens: higher education could no longer be regarded as the adventitious social right of a few; it was the basic individual right of all. The work of the Open

University was to be focused mainly upon adults; where it was possible for younger students to attend sandwich courses, part-time day release, or block release courses they would not be considered for enrolment in the Open University. The committee underlined in particular the fact that there were many young married women who had been denied the educational opportunities currently available to men. The Open University would 'have an unrivalled opportunity to rectify the long-continuing imbalance' (115, p. 5).

In its consideration of the techniques to be used, the Committee accepted the fact that the imaginative use of the broadcasting media was an efficient means of instruction, which could draw upon a nation-wide pool of specialists and expert teachers. In addition, however, students needed to undertake some regular written work, and the only method which could be made available everywhere and to a very large number was that of correspondence tuition. The report noted that this had, in fact, been the main agent of university expansion in Russia, and that nearly half of all Russian students in higher education were pursuing correspondence courses. The Robbins Report had supported the use of correspondence courses, with television as an ancillary (101, p. 262, para. 821); it had also suggested that British universities should experiment with such courses.

The committee saw the Open University as a way of integrating a number of teaching systems including sound radio and TV, correspondence courses, specially programmed texts, group discussions and part-time face-to-face teaching. It was also decided to provide both ordinary degrees and honours degrees, which would be obtained by the accumulation of 'credits' in individual courses, each lasting for one academic year. Six credits would be required for an ordinary degree and eight for an honours degree; and the normal minimum period for obtaining a degree would be four years. Thus, what has become a normal system for obtaining degrees in the USA, Canada and Australia via a method of collecting credits, is now available in our own society, at least as far as the Open University is concerned.

So, by a variety of means through technical colleges, colleges of further education, colleges of technology, colleges of art, part-time evening classes, external degrees of London University, CNAA degrees, Open University studies, day-release courses, and a multitude of other certificate, diploma and degree courses, education has rapidly taken on the shape of a recurrent or continuous process for those who have the time, the energy and the will. Insofar as it is possible to have equalisation of educational opportunity we appear to have gone a long way towards it, though not everybody will take exactly the same route any more than they would in a communist society. But if a labourer

of fifty wishes to study for a degree there is a variety of channels open to him; if an old lady of eighty desires to do an 'A' Level in Russian, in theory at least there is nothing to stop her; those who have failed academically at school have a wealth of opportunity open to them, if they have the will.

One has to face the fact, however, that the raising of the school leaving age to sixteen – or even seventeen or eighteen – will not in itself make all people equal, nor is the education of some children improved or developed in direct proportion to their length of stay in school. Some learn more from leaving school early and taking up study later on in life when they are able to appreciate in a more mature manner what is offered to them. Even before the process of comprehensivisation is complete, assuming that eventually all LEAs will be forced to adopt a relatively common policy in our society, we need to look again at the 'model' of the school and the extent to which it is functional in terms of real education as well as of a technological society. Some schools resemble very closely the assembly line in a factory; others clearly regard their function as that of a laboratory for social engineering; others argue simply – perhaps too simply – that it is a place where children should be 'happy'. A healthy society, however, will make provision for a great variety of institutions to suit an equally great variety of temperaments, interests and learning styles; and it will follow closely, with 'illuminative evaluation' (149) (117), the development of different types of school and programme.

B. CURRICULUM

It is a fact, as J. Holt has pointed out, that 'knowledge is not only growing with enormous rapidity, it is obsolescing with enormous rapidity' (65, p. 142). Unlike the Renaissance Man, we can no longer hope to master the whole body of knowledge even if it would remain still. Indeed, a scientist with a higher research degree in solid state physics may be out of date within about five years. We live in a world in which an 'expert' may in fact be a man who is the leading authority on a particular parasite living on the back of a particular species of lizard, or a scholar who knows all there is to know about the works of Chaucer. In such a milieu it becomes increasingly problematic to decide on a core curriculum for anyone, or whether such a curriculum is any longer meaningful. In the long run, any curriculum will be dependent upon, as well as reflect, the philosophy of life of its inventors; and philosophies, as well as ideologies, are very much in the melting-pot. Today there is a tendency to believe that 'learning *how* to learn' and the possibilities of the transfer of learning are much more important than *what* is

learned. If Heisenberg is right when he says that 'what we observe is not nature itself, but nature exposed to our methods of questioning' (quoted in 119, p. 82), then the sort of questions we ask and the type of problems we set ourselves become more important than a specific and hermetically sealed body of knowledge we hope to acquire. Disciplines, or 'ways of knowing', become the acquired skills and instruments we employ throughout the whole of our lives in order continuously to educate ourselves. In any curriculum we may, therefore, devise we need to remember that what finally remains of vital importance to the child is the 'reality of encounter' (35, p. 81), and the acquirement of the means of self-fulfilment in terms of the disciplines mastered and in the context of a lifetime of learning.

Thus, it becomes clear that any suggested curriculum of the future must be firmly based on accepted aims and objectives. It is not argued that one should launch out upon a taxonomy of the dimensions of the work of Bloom *et alii* (12) (13) on each occasion, although certainly an understanding of Bloom will do no harm. Cromwell may well have been right when he said that 'none goes so far as he who knows not whither he goeth', but in the design of curriculum building it is important that the child should go somewhere *worth* going, even though he doesn't go very far; and without the planning of some specific routes he might well finish up in a maze that leads nowhere, but can become very frustrating. Between an inflation of aims, however, and none at all there is a happy medium, and indeed the initial task presented to a group involved in curriculum change might well be defined in terms of the expansion of a *minimum* number of curriculum objectives.

Resistance to curriculum change or innovation has always been strong, and perhaps some of the underlying motives for this are not far to seek. G. Bernbaum (164, p. 91) has expressed it in the following terms:

'Those sociologists who are now beginning to study the social context of the transmission of knowledge, and the way in which forms of knowledge can be related to different types of social control, emphasize the manner in which new knowledge can be used in altering established systems of authority. As a result, those who exercise power and authority under the existing arrangements might resist curriculum innovations which they will see as threatening the status, prestige, rewards and opportunities open to them under the prevailing structure.'

Despite such possibilities of resistance, however, a variety of research units, including the National Foundation for Educational Research (NFER), the Nuffield Science and other projects, and the Schools

Council research teams, have gone ahead with their curriculum work and have produced considerable material for curriculum innovation. No one would claim that curricular changes have always been successful or without considerable problems, but they have covered a wide range of possibilities. These have included French and religious education in primary schools, social studies for school leavers, rural studies and religious and moral education in secondary schools, humanities via a variety of disciplines for the school leaver, new science and mathematics programmes at all levels and a great wealth of integrated studies projects. Some attempts have even been made at integrating the total curriculum under the aegis of the humanities (155, p. 106), embracing such disciplines and their methodologies as anthropology, geography, history, religion, politics, sociology, ethics, and economics.

No attempt can be made here to outline even in general terms specific curricular innovations. The work of certain individuals, such as Lawrence Stenhouse in the field of humanities, has been outstanding in the realm of both curriculum research and change. But it is true, as C. E. Beeby has pointed out in his study of the quality of education in developing countries, that the drive for educational reform in curriculum as in other areas is most likely to be successful if it is not an isolated phenomenon, but

'part of a nationwide movement for modernization under a strong national leader. If there is change in the air, if he feels himself carried forward with the rest of his colleagues on a wave of reform, an intelligent teacher may reach a level that previously seemed impossible' (8, p. 197).

Individuals invariably gravitate into and between institutions, and in the long run, certainly in terms of curriculum, they can express and test innovations only within the context of the college and the school. Goldsmiths' College Curriculum Laboratory has a team of researchers, led initially by Charity James, who have experimented considerably in a variety of curriculum enterprises. Their innovations have included some in interdisciplinary enquiry (IDE), some in interdisciplinary making (IDM); others in intradisciplinary or autonomous studies, in remedial education, and in orbital studies involving special interests. The new curricula which emerge usually have a number of things in common, which have been summed up by Evans Clinchy in the following way (29, pp. 220–38):

(i) New programmes have usually been initiated by, and involve, men who are among the best minds which a particular discipline can offer.

(ii) Such programmes tend to be national in scope and to be supported on a large scale.

(iii) The first step in the important reforms has been for the scholars to decide what is to be taught.

(iv) All significant reforms have involved a deliberate effort to bring the curriculum up to date.

(v) Current reforms invariably involve a radical approach to the content as well as explorations into new ways of instruction and learning.

(vi) The programmes almost always include the production of new educational materials, or specific directions for building instructional 'models' and their trial within the classroom before they are made widely available to the schools. (This has been particularly true of the production in our society, for example, of reading materials for the teaching of English to immigrants.)

(vii) There is a tendency to develop an expanded range of integrated materials designed to foster the inductive, 'work-through-the-problem-yourself' approach to learning.

(viii) The programmes and the methods they have developed tend to cast the teacher in new and different roles.

(ix) Most of the major revisions have undertaken programmes of training teachers to handle the new materials and the new methods.

(x) The present programmes are accepted as merely the first step in a large, long-term effort.

C. METHODS

It is inevitable, as we have seen, that as soon as one discusses curriculum one is involved in method; and any new-style curricula will result inevitably in changes in methodology. It may be, as in the development of the integrated day (145), that the whole organisation of a school may be affected by the methods it has adopted. In any form of interdisciplinary studies, however, more than one department of a school will be involved in a particular theme that is being developed. Since this will mean also the pooling of departmental resources and the facilities of the school at large, as well as corporate decisions in the taking of a variety of actions, team teaching is virtually unavoidable. D. Warwick defines team teaching as: 'A form of organization in which individual teachers decide to pool resources, interests and expertise in order to devise and implement a scheme of work suitable to the needs of their pupils and the facilities of their school' (154, p. 18).

But it must be remembered that 'a team is a team is a team', and

that the creation of a team in terms of any educational work or project will involve more than just the bringing together of expert bodies because this happens to be the best way to develop their expertise. In team teaching a large number of things begin to change. The teacher is no longer an isolated unit in a sealed-off classroom; his role takes on a different form and he will find himself criticising, both positively and negatively, the work of his peers as well as being criticised by them. This may be an entirely new, and perhaps unpleasant, experience for him. Moreover, he will also find himself in the position once more of being a learner with regard to other people's expertise, however skilful he may be in his own; and this requires humility on his part as well as a willingness to become once more a pupil amongst pupils.

Because of this integrated concept there is a developing view of the school itself as a resource centre, or rather as an institution in which there are 'networks', or 'opportunity webs' for learning as I. D. Illich has called them (68, pp. 76–81). There can be nothing more frustrating to a child than for him to be presented with heuristic or enquiry methods without the provision of adequate resources to find the answer. 'Finding out' may, or may not, be better than 'telling' dependent upon whether it is possible for the child to find out, whether it is in any particular situation better than telling him, and whether the effort he puts into finding out is really commensurate with the result. Much depends upon the sort of resources available and their correct use (56). 'Things' are a means of communication, whether we are thinking in terms of libraries, typewriters, computers, projectors, tape-recorders, record players, cameras, musical instruments, or machines or tools. But the use of all these things implies the acquisition of certain skills which have to be *taught*. Anyone who has tutored in a college of education, for example, knows how inadequate is the ability of many students to maximise their use of the library. They have literally never been trained to utilise this facility as a resource centre for 'finding out'.

In his *Compulsory Miseducation*, P. Goodman has argued vigorously against the use of programmed learning, although perhaps what he is really talking about is its misuse rather than use. Like any other method it is open to abuse and, in its early stages of development, has undoubtedly been abused. As a learning method, a programme, whether in the form of a text or a machine, has considerable utility in a large unstreamed class in which the backward may be doing nothing because they have got so far behind, and the brilliant are frustrated and held back because the teacher cannot teach selected individuals at the expense of the average majority. Such individual programmes permit the pupil to travel at his own pace, which may be very fast or very slow. One needs seriously to think, however, about the use of pro-

grammes simply as a means of absorbing factual information; and, if they are to be used for this purpose, in exactly what areas of knowledge and learning they are to be employed. Goodman may not be wholly right, but he is at least partially right when he says:

'Programmed teaching adapted for machine use goes a further step than conforming students to the consensus which is a principal effect of schooling interlocked with the mass media. In this pedagogic method it is *only* the programmer – the administrative decision-maker – who is to do any "thinking" at all; the students are systematically conditioned to follow the train of *others*' thoughts. "Learning" means to give some final response that the programmer considers advantageous (to the students). There is no criterion of *knowing* it, of having learned it, of Gestalt-forming or simplification. That is, the student has no self at all; his self, at least as a student, is a construct of the programmer' (50, p. 71).

In the new models of learning, the conventional class of thirty or whatever is seen as only one possible learning situation among many. There may exist groups within the class working together on the basis of some 'convivial' principle, or because they are at roughly the same level of attainment. Groups may however be formed on the principle of common interest within a specific theme or project. For some purposes several classes may be brought together under some scheme of team teaching within integrated studies; for other purposes individuals might be permitted to wander off on some heuristic quest; whilst 'paired learning' has proved of value in other situations. Where the total curriculum is integrated there will exist a rich variety of grouping and learning techniques (28).

Perhaps the main theme in method today is that of leading the child to question with a radical doubt, rather than dumbly to accept what the teacher says. This, of course, has its dangers. It can lead to a facile negation of everything the teacher states, on the basis of not accepting authoritarian statements. But in a balanced situation it could lead to an acceptance of the teacher as being authoritative at least in some areas in which he is an expert, or a mini-expert; whilst, at the same time, permitting the possibility of questioning his opinions in other areas of learning. The class is not an assembly line in a factory with children there to be fitted, as it were, with identical parts. Some basically essential parts may certainly be identical: there is a need for all to be able to read, write and do simple computation. Beyond that, it is the evocation of awareness itself which is of vital importance. Even language itself –

the great theme of our time – can also be a snare and a delusion. I. D. Illich makes the point when he speaks of the eloquence of silence:

'Language is as a cord of silence with sounds and knots – as nodes in a Peruvian *quipu*, in which the empty spaces speak . . . we can see language as a wheel. The spokes centralize, but the empty spaces make the wheel . . . . It is thus not so much the other man's words as his silences which we have to learn in order to understand him. It is not so much our sounds which give meaning, but it is through the pauses that we will make ourselves understood' (69, p. 41).

There is in education a tendency to develop catchphrases as if they possessed some mystical, intrinsic power, and as if the mere utterance of them would be sufficient to change society. We 'educate for change'; we 'educate for democracy'; we must 'celebrate awareness' and have regard for the 'eloquence of silence'; education must be 'relevant' and must seek to 'socialise' the child; it must be 'child-centred' and not 'teacher-centred' or 'subject-centred'; we must develop 'creativity' within the child; we must have 'dialogue' with the child (19), and 'work is play is work'. It would be easy to become cynical about the multiplicity of panaceas and placebos which have been suggested for the reform of educational systems and methods, accompanied by dark warnings about the 'hidden curriculum' (139) which, in its highly sinister way, is moulding the lives of all our children.

That the institution of the school needs adaptation to make it more flexible for the introduction of a variety of curricula and methods, perhaps no one would deny. There seems, however, to be no solid agreement on the basis of careful evaluation, as to what form the institution should take – if any. M. Huberman (quoted in 11, p. 49) rightly says that 'We seem to have forgotten that, at the base, schooling is simply a set of planned experiences that have been institutionalized'. But the institution is a part of the method of planning those experiences; the institutions that exist may be quite inadequate, but one cannot 'deschool society' at one fell stroke hoping that alternatives will immediately present themselves. The one solid fact that does emerge out of all the developments of method, as well as of curricula and of institutions, is that different children have different learning styles and needs, and that therefore they require different sorts of learning situations and institutional provision (20, p. 21). To lump them all together in exactly the same sort of institution is to treat them as objects to be manoeuvred by a form of social engineering, in order to produce the same type of being – one that is becoming increasingly alienated from both culture and society.

D. RESEARCH

During the last decade it has become increasingly clear that in order to understand change and to respond to it in an intelligent and effective manner, one has to be involved in the active planning of change through research itself. One has to face the fact, in A. Toffler's terms (148, p. 19), that the future has arrived prematurely, and that the *rate* of change has increased so rapidly that as observers we barely have the time to look at the *direction* it is taking. The recognition of this in the English experience resulted in the establishment of the Schools Council, which began work in October 1964. It has at present an annual budget, quite inadequate in terms of total educational expenditure, of £1½ million financed jointly by the DES and LEAs; and its terms of reference are simply 'to organize a more rapid, and more effective, response to change'. It has, over the ensuing years, produced a whole series of working papers concerned with a great variety of topics, from the raising of the school leaving age, support for science and technology in schools, to multiracial education. It is not possible in the space available even to list the topics, let alone to discuss the suggestions made. Suffice it to say that as a result of the research done there has been a greater interest, at all levels, in teamwork, collaborative effort, and innovation generally. Some of the most interesting and constructive work has been in the areas of religous and moral education.

In the development of new institutions, new curricula and new methods one has to avoid the confusion which so often exists between 'innovation' and 'creativity' (141, p. 142). What is new or novel in education is certainly not always better in terms of effectiveness but just different; on the other hand, provided it is not less efficient there is always something to be said for change and innovation, and for what is just different, in a society which is perpetually undergoing change in all other areas. This, after all, is what technology is all about:

'Technology is, by definition, implicated in the process of bringing about change and regulating it, and any educational policy which fails to understand this declares itself ostrichist' (124, p. 20).

Nor should innovations be viewed or evaluated in isolation. In themselves they may not seem better than what exists; but when examined in terms of the total school context, or learning milieu, they may prove to be far superior. The researches of M. Parlett and D. Hamilton at the Centre for Research in the Educational Sciences, University of Edinburgh, indicate quite clearly that the old, so-called 'objective methods' of research evaluation have led to studies which are both artificial and restricted in scope. As a result they have argued for 'illuminative evalu-

ation' in an anthropological research paradigm (117, passim). One of the points the writers make is that before-and-after research designs assume quite wrongly that innovatory programmes undergo little or no change during the period of study (117, p. 6), and this contention is reinforced by the work of M. D. Shipman who suggests that

'Curriculum change does not proceed through a clear cycle from a statement of objectives to an evaluation of the learning strategies used. It is a process of bargaining, negotiation and horse-trading' (138, p. 43).

In the development of any research programme it becomes essential to take into account any new variables that may arise during the process.

The research work of the National Foundation for Educational Research (NFER) and of the Nuffield Research Centre at Oxford has been of considerable importance in the fields of educational psychology and the understanding of child development, as well as in the exploration of the curriculum and of other areas of educational interest. In particular, there has been a change of emphasis from teaching and instruction to the problems of learning or mathetics. There has also been generally a gradual acceptance that technological innovation *in vacuo* can be dangerous and that, for such innovation to be really meaningful and effective, the implications of its use have to be considered in relation to the total education system (45, p. 177).

Research in education is very much the child of the future, and any educational establishment which lays claim to be progressive must be not only interested in innovative research but also engaged in it. Colleges of education, for example, have in the past been regarded as academic institutions of a somewhat lower order because they did not engage in research of any nature; this was the province of the Departments of Education at the Universities. It is clear that, in the future, colleges which train teachers, as well as the polytechnics and colleges of technology, all of which are involved in at least first degree work, must take on the research role if they are to remain in the academic race. But in the end research is practical and alive only if it is additionally carried on in the institutions where ultimately the innovation will be adopted; and the chief target population is the school itself. There is, therefore, a strong argument for school involvement in any research likely to affect in any way its organisation, system, curricula, methods, relationships or roles.

Evaluating Change and Innovations

Until quite recently school systems have rarely been equipped or even motivated to attempt to evaluate the effects of their learning and teaching activities. There seems to have been an assumption that an innovation is good *per se*, because it is new and unaccustomed. This idea is further reinforced if the innovation lasts, if it appears not to be doing a poorer job than the practice it has replaced, and if it does not, at the same time, disturb too much the other activities which are in progress in the school. In the words of Hilda Taba (144, p. 315):

'Careful evaluation has not been made of the innovations of the past, nor is it being made today. This failure to assess the effects of innovations against their total outcomes has been perhaps the cause of the fact that in American education curriculum revision proceeds by replacing one scheme with another and one "approach" with another, not necessarily because objective evidence has demonstrated the merits of the one or the failures of the other, but merely because the new scheme or approach somehow has gained attention, is in "fashion" for the time being, or is championed by forceful leaders.'

Whilst Taba speaks specifically of American education, what she says applies equally to most western societies where change is in the air, where fashion is king in almost every sphere of action and behaviour, and where people have become bored with repetitive activities. Taba (144, pp. 316–23) goes on to suggest that in order to perform the necessary functions, the evaluation programme should have certain characteristics, and she names six.

1 *Consistency with objectives.* Any evaluation must be consistent with the objectives of the innovation, whatever its nature. It needs to have an integral relationship to the main aims of the programme, and should be 'animated by the same philosophy that underlies the curriculum and teaching'; that is, what is considered to be most basic in the innovation should also be considered as most important in the evaluative stage. In

general, the instruments and methods employed in evaluation must reflect, and be consistent with, the nature of the innovation.

2 *Comprehensiveness.* The programmes of evaluation should be as comprehensive in scope as the main objectives of the school. 'The supply of evaluation devices tends to be inadequate for most objectives concerned with the higher mental processes, such as thinking, social attitudes, aesthetic development, and moral values' (144, p. 317). Teachers themselves know very little about the techniques of developing instruments of evaluation and they, therefore, require the help of experts who have the technical competence to secure evidence on the more complex outcomes. Many decisions on the implementation of curriculum innovations are currently made on insufficient evidence in terms of evaluation. For example, it is possible to gain efficiency and economy in education at the expense of the development of reflective thinking, social attitudes and creativity. One has to be certain that specific innovative materials (e.g. TV for mass instruction, programmed texts, etc.) are being employed in the right contexts and in the best possible way.

3 *Sufficient diagnostic value.* The results of evaluation must be sufficiently diagnostic to distinguish 'various levels of performance or mastery attained and describe the strengths and weaknesses in the process as well as in the product of performance' (144, p. 318). It is also important to distinguish the various processes which lead both to acceptable products and to errors; only in this way can the curriculum be geared to a greater depth, and the level of understanding on which the student performs be determined. The fault with many programmed packs and kits is that they are geared simply to one level – very often a grey, unimaginative middle range. And just as the innovation itself needs to be multidimensional so also the evaluation devices need to yield multiple rather than single descriptions. In order to achieve this the instruments themselves must be shaped and selected in accordance with an analysis of the processes involved in the achievement of specific objectives. This implies further, that the data upon which evaluation is based must be reasonably free of subjective bias and any other deficiency which might mar their accuracy or objectivitiy.

4 *Validity.* Validity is 'the capacity of the evidence to describe what it was designed to describe' (144, p. 321). This criterion of validity is frequently overlooked because such considerations as ease of administering or economy of time tend to loom larger. The validity of a particular instrument may be severely jeopardised if the content it uses,

or the skills it requires, are not really appropriate to what the group has mastered. In addition, when the objectives of an innovation are vague, abstract or diffuse, difficulties with the criterion of validity will increase. Thus the precision of the statement of aims, whether on the basis of an elaborated taxonomy or not (12) (13) (162, pp. 31–4), will result in evaluative instruments being developed which can test whether such aims have in fact been achieved, and the validity of the innovation can be established, or of course refuted.

5 *Unity of evaluative judgement.* Evaluation processes are, by their very nature, analytic. But it is a particular weakness of current evaluation programmes that data concerning the progress of pupils or students towards educational objectives 'are evaluated or interpreted without sufficient knowledge of the nature of students as learners and of the nature of the instructional programme' (144, p. 323). Individuals possess different learning styles and it cannot be assumed that a particular innovation (say, in the learning of reading) will, or should, have the same sort of success with all pupils, even though the pupils are comparable in terms of intelligence, general ability and even interest or enthusiasm. To attempt to measure behaviour in any clear or precise way – insofar as this is possible – and to note the differences among individuals accurately, we need to break down the larger complexes of behaviour into smaller units and attempt to measure each of these separately. 'To permit its evaluation at all, an objective needs to be broken into its component units for an analytical differentiation of the specific behaviours it entails, and specific devices used to secure evidence on these specific behaviours' (144, p. 322).

6 *Continuity.* Evaluation must be a continuous process and must form an integral part of curriculum development, of instruction, and of learning. It should begin with a diagnosis at the beginning of the adoption of any new programme or innovation, continue right through its development, and end in whatever tests are considered appropriate at the conclusion.

In general, it would appear that school personnel are more preoccupied with the feasibility of an innovation, in terms of probability of acceptance or possible disruption of current work, than with its potential for improving instruction. The chief reason for this is that the proposal involves new ways of acting and interacting, usually at the classroom level, which most school personnel are loth to accept. The project often, as a result, becomes a personal conflict between those who clearly want to change others and the others who, with equal tenacity,

have no desire to be changed. There is a resentment on the part of the latter, who will tend to reject any initiatives from above or from outside which purport to seek to improve *their* way of doing *their* work. There is a certain insularity, even a sense of possession, about the work of the individual classroom which seems to oppose any form of intrusion from outside at any time. The writer recalls an occasion at the beginning of the term when he was about to introduce a course of social studies to a sixth form in a grammar school. A visiting county inspector, who was certainly interested if not over-enthusiastic, requested if he might 'drop in' and listen to the introductory lesson. So sensitive was he to the possibility of rejection that he carefully added, 'Of course, if you would rather I didn't come in, please say so'. There appeared to be an underlying assumption, probably based upon experience, that teachers objected on principle to any invasion of their classroom privacy. But if an innovation is really to be *seen* to be successful it needs not merely the casual visit of an external observer, but the careful analysis of the outside expert or moderator. A really scientific attempt to evaluate any innovation is certainly necessary.

The precise manner of evaluating any innovation is by trying it out on an experimental basis, and by comparing the results with those of a control group which is not using it. Such experimental evaluation, however, is both time-consuming and expensive, and it requires outside assistance in design measurement and in assuring that objectivity is maintained throughout. Certainly the majority of schools would be unwilling, or financially unable, to make such an investment, which is frequently two or three times the cost of the introduction of the innovation itself. Nor, of course, are they able to afford the luxury of controlled situations and measurable procedures for a long period of time where school children are concerned; so that, however sound Hilda Taba's evaluation programme may be, its detailed analysis of the innovative situation and its continuity would prove very costly. Finally, and perhaps not least important, teachers are often unwilling to risk failure in the eyes of external evaluators who tend to come from university departments of education, or from the Department of Education and Science and its inspectorate, or from the county education advisory department. Unless these problems have been ironed out in advance, and unless evaluation funds have been built into the original plan, the system will inevitably utilise more intuitive, hit-or-miss methods for judging whether it should accept the proposed innovation, or whether the ensuing change has proved successful in practice.

Another common type of problem with experimental evaluation is what is variously known as the 'halo', 'Hawthorne' or 'placebo' effect. This, put simply, is the fact that the conditions which surround any

experiments – particularly those involving social and human behaviour – tend to distort the results. All those involved in the experiment will generally be aware that they are receiving special attention, or will be working harder in order to ensure that the experimental trial proves a success. Both teachers and pupils will tend to perform better, administrators will be avidly interested in the project, and more amenable classroom arrangements will be provided. Probably, therefore, the best time really to assess an innovation is when it ceases to be an innovation and when the project can no longer evoke special enthusiasms, energies or resources (149) (163).

We have already mentioned the importance of clearly defining the objectives of any such project if we are successfully to measure its effectiveness. It is vital that we know what the pupil is capable of thinking, feeling or doing now, *after* the innovation, that he was unable to think, feel or do *before* the innovation, or that he previously did less well or less efficiently. It is important also to be in a position to isolate or specify the part played by any new device or operation as distinct from the personal influence of the teacher, or the effect of the particular classroom, or the child's emotional condition. Moreover, of course, different indicators of effectiveness are required, for example, as a team-teaching project from those found necessary in a new science curriculum.

One of the main problems in any attempt to measure the role of an innovation in the improvement of the learning abilities of pupils is that not all such improvements show up immediately. This is certainly true of most important ones. Taba emphasised the importance of continuity as a characteristic of evaluation, but it is well to note that the effects of new media, pupil group activity, new methods of study, revised programmes of teacher training, and curricular changes are usually delayed for a number of years. As a result it is frequently argued that, since there are so many problems in measuring whether, and how, a pupil is learning more efficiently, or whether a teacher is performing more effectively, we should try instead to concentrate upon small aims, that is, upon slight but precise improvements in the speed or accuracy with which pupils may read or spell or compute.

If we adopt this principle we find that the sort of changes and innovations which best pass this short-run evaluation usually turn out to be minor modifications of existing practices. As a result, there is a tendency to concentrate upon making the traditional system work more efficiently rather than to try out major changes which might easily show poor results during the first few months or even years, but which have the potential of a significant impact in the long run. But in any event it is frequently argued that, if innovations in education are clearly radical,

they will have objectives which the conventional instruments and techniques of evaluation are incapable of measuring; so that Taba's criterion of 'consistency with objectives' becomes almost irrelevant.

Taba (144, pp. 324–9), in a discussion of a comprehensive evaluation programme, emphasises the need to formulate in some detail and to clarify the objectives which underline any new curriculum programme. The whole question of aims and objectives would appear to be fundamental. In an international conference which was concerned with the management of innovation (159), it was argued that no correlation existed between the innovativeness of an educational system and the level of achievement of its students. Both the United States of America and Sweden, with their highly innovative systems, still manage to rank below the leaders in international comparisons of achievement in mathematics. The Scandinavian representative replied that mathematics skills and factual knowledge in general were less important in the Swedish system than were the developmental goals of students – such as, greater critical awareness, less conformity, more ability to adapt, and creativity – and that any innovations that were adopted were directed to these objectives in particular. The conference, in the end, found it virtually impossible to frame a list of objectives which would be considered in their entirety, and by all concerned, to be acceptable, sufficiently precise or even innovative in character.

It is, it would seem, the *durability* of an innovation which finds the most practical and frequent measurement. If the project is for some reason rejected, or discontinued after a while, it may be said that the innovation has failed. Several possible reasons have already been mentioned in previous chapters: there is an incongruence with the receivers' current values and practices, inadequate planning, insufficient training for the adopters, a lack of commitment, a lack of resources, deficiencies in the innovation itself, an absence of follow-up mechanisms, or replacement by a superior innovation. There also appear to be examples where a project is discontinued for a time and then adopted or readopted at a later date.

In any assessment of the outcome of an innovation in terms of the original goals set for it, we must take account of the authenticity of the innovation and whether the project (or whatever) has in fact been amended or in any way modified. It can be determined fairly soon whether all the components of the innovation have actually been added to the system and whether the new practice is in use in the classroom. H. M. Brickell (18, pp. 284–5) distinguishes between 'components', or structural changes, and 'processes', or activities intended to follow from such structural changes. When the chief components are people, as is the case in instructional systems, the desired process may not occur.

For example, the team teachers may not team teach – perhaps one of the most commonplace causes of innovative failure; the CCTV may not in fact be turned on; and the programmed text may not be assigned to the class in the correct manner or sequence. Although, for example, instructional films have existed in schools in the USA for over thirty years, it was recently revealed in a national survey of educational technology in America (67, p. 88) that the average use of such films is less than five per teacher per year.

A fundamental question in all this seems to be whether the school system has changed the innovation and, if it has, then in what way. Is the new curriculum the same in practice as it was originally in design? Is the subject content which is being transmitted in the classroom, contained in the instructional materials and called for in the pupil tests, similar to that in the original?

'Are the actual classroom operations which teachers employ from day to day strongly reminiscent of those in other schools where the innovation is being used successfully? Does the classroom behaviour of the pupils approximate that of pupils receiving the same instruction elsewhere? Are the equipment and materials identical with or similar to those originally designed for the innovation? Are they being employed in the same way? . . . Do the local variations actually represent an intelligent tailoring of the innovation to fit local needs, as by adjusting the pace to match the abilities of local children? Or do they represent . . . misunderstanding of the original; or incomplete adoption?' (18, pp. 297–8).

Another series of indicators refers to the changes brought about by the innovation in the surrounding school system. For example, are the demands of space, time and equipment so great that as a result the servicing of the innovation will disrupt instructional practices elsewhere or deprive them of resources? Does the new practice involve new rules concerning access to facilities, new grading or selection methods, new staffing arrangements, which have not been changed in the school at large? Is the teaching staff clear about the nature and objectives of the innovation? Are they protected from the risk of failure? Are they emotionally favourable to the project? Is the administration firmly behind it and prepared to defend it before community and ministry officials?

In the absence of scientific evidence as to whether the innovation will result in increased or more efficient learning it may be that the most important criteria for evaluating change are those related to the effect

on the school's potential for change in the future. It may seem somewhat paradoxical, but the side effects of an innovation may count more than the direct effects. M. B. Miles (90) has this in mind to some extent in his list of 'innovative success criteria':

(i) use of the innovation to accomplish broader purposes than those originally envisaged;
(ii) existence of publications designed to draw the attention of a wider audience to the innovation;
(iii) improved attitudes or skills of the innovating group members which may affect their later innovativeness;
(iv) spread or diffusion of the innovation to other systems;
(v) stimulation of innovation in similar areas of school practices;
(vi) promotion or advancement of practitioners who have backed the innovation.

Finally, the evaluation of school systems may be done in terms of the traits and functions of innovative institutions which were outlined in Chapter 14. In this case the assumption would be that school systems with goal focus, communication adequacy, optimal power equalisation, cohesiveness, morale, innovativeness, autonomy, adaptation and problem-solving adequacy (Figure 9) (91, pp. 18–21) would tend to make more frequent and more effective changes. They would also set up experimental units, organise and conduct research, invest in programmes concerned with the development of personnel, and keep in close contact with professional and community agencies. It is a fair assumption that such systems would employ a greater number of innovative people; that is, people characterised by what O. Harvey has called a high degree of 'abstractness', and further described in clinical terms as emancipated and liberal, non-authoritarian, open to new ideas, experienced and self-actualised (see Chapter 13).

Summary and Conclusions

As we have seen, education as a social system has been the subject of constant innovation and change. It is only within recent decades, however, that the anatomy of the process has begun to be studied in anything like a systematic way. Whether the system has been involved in a new piece of legislation (such as the raising of the school-leaving age to sixteen in England and Wales), or in a new method of instruction (such as i.t.a. in reading), few changes seem to have been planned and organised in sufficient detail to predict or control the consequences. For example, it may be that the short-term effect at least of the raising of the school-leaving age will not be an improved level of general education for all children, but rather an increased resentment at keeping them from entering the world of work, and a greater amount of truancy and problems of a disciplinary nature. The long-term effect may, of course, be a resolution of all these more immediate problems and a better educational system generally.

Usually the attempt has been made to reconstruct the nature of the process of change *after* the event in order that we might avoid committing the same errors on the next occasion. It is only when the need for major reform in education has been fully recognised and accepted that we can examine more closely the elements which assist or hinder the enactment of change. We are then in a position to plan the process in such a way as to ensure that the changes made are more durable, measurable and similar to the original version of the innovations proposed.

It would seem, however, that in the present circumstances it is impractical to conceive of change in education as a type of social technology. Even during periods of accelerated social change, school systems alter very slowly, and frequently they need considerable pressure from outside to modify existing organisation and practice. At the time of writing there is some resistance to the comprehensivisation of education by certain local education authorities and by particular individual grammar schools. Pressure is being brought to bear by the existing government, through the Secretary of State for Education, upon the LEAs that

are dragging their feet, and are slow in producing schemes for the reorganisation of secondary education; whilst some very compliant LEAs are similarly bringing external pressure upon recusant grammar schools.

Society has created the institution of the school in order to ensure social continuity through the mediation of its essential culture and values; and it has hired trained professionals to work in them. These professionals have a tendency to resist novelty more stubbornly and to initiate new methods and practices less frequently than professionals employed in other sectors of society. Reforms are also inhibited and delayed by the absence of individuals with the role of change agent and of information concerning new possibilities in curriculum content and instructional or learning method. The goals of schools are multiple and often contradictory; moreover, schools possess few resources for exploiting new methods, and they provide no rewards for staff who are sufficiently interested and enthusiastic to innovate. It is very difficult to demonstrate conclusively that one instructional or learning method is better than another, or to publicise malpractices, and so there exists very little impetus to reform.

The whole subject of educational change and innovation is a very complex one because it has to be studied at several levels. There is the level of the individuals being changed or changing others, there is the institutional level, the community level, and finally the wider environment in which some innovations are acceptable whilst others clearly conflict with existing values.

It is very rare that innovations are installed on their known merits. The main factor appears to be the relative importance attached to the anticipated advantages and the threats of the change in the eyes of those persons who are directly affected. Change in education may, of course, involve physical objects such as school buildings, classroom units, laboratories, equipment, books, materials, etc. But it also involves persons in that they may be required to alter their particular way of looking at things as well as their habits of dealing with other adults and with children. Such change is inevitably slow, and if it is pressed too strongly it usually builds up even stronger resistance and opposition. Teachers tend to resist, in particular, any change – whether in terms of class arrangement, methods of instruction and learning, or materials – which leaves them with less control in their classrooms.

The attitudes and behaviour of both administrators and teachers are functions of their own personalities as well as of the institutions in which they work. It is natural that most institutions and organisations should be designed for stability and survival rather than for change; and

they seldom have built-in mechanisms for changing themselves from within. Schools also reflect very closely the concepts and values of their surrounding communities, and so they can try out only those new practices which have already been accepted by most parents and legislators. Democratic relations such as those which often exist between teacher and pupil, for example, are not always being practised between parents and their children, or between employers and employees, although in contemporary society, at least, there is a fair assumption that these attitudes are certainly developing outside the school and may, therefore, be fostered within.

Innovations tend to be generated more often and to be accepted more readily by individuals with a number of common traits and characteristics, which include youth, high social status, self-confidence, willingness to take risks, possessing stronger than average contacts outside their immediate community, and having a tendency towards opinion leadership among their colleagues. Innovative teachers, in particular, are more self-confident, share their experiences and information about teaching more widely, and are generally more dedicated professionally. Innovative institutions also appear to have certain traits in common; they usually enjoy greater financial support, more highly trained teachers and more highly educated parents. They also tend to have a clearer conception of their institutional objectives, to have a sound communications network amongst teachers as well as between teachers and administrators, to have a higher morale and a greater cohesiveness, to invent new practices and procedures more frequently, and to be more sensitively aware of new developments in research and policy. In particular, innovative schools devote resources over and above those required for normal operations to gaining knowledge of new aspects or methods and trying them out.

Since, up to the present time at least, it does not seem possible to produce blueprints for effecting innovations in education, we have to concentrate upon the factors which appear to favour or to impede any durable change. Positive factors would include the following: proven quality, low cost, divisibility into parts, ease of communicability, low complexity, strong leadership or sponsorship, a favourable rather than neutral or inhibiting school or other institutional environment, compatibility with the values and existing practices of the adopters, an effective mixture of rewards and punishments, readiness for change in the target system or group, and the appropriateness of the proposed innovation to the surrounding community.

Studies of the way in which educational change takes place in a variety of settings have produced three main paradigms:

(1) The research and development (R and D) model proceeds from theory to practice: innovations are conceived, initiated, incorporated and evaluated as part of an elaborated design supervised by a central planning agency.
(2) The social-interaction model follows the diffusion of the innovation among the members of a group or institution.
(3) The problem-solving model interprets change from the point of view of the individual adopter.

In any single innovation all three processes are to some general degree at work; but national or local systems, in particular, tend to emphasise one or another process in their efforts to accelerate the passage from decision to application.

In a similar way education authorities use different techniques for the implementation of change. The strategy which is generally selected reflects the relationship between senior administrators and local teachers. In systems which are highly decentralised, greater initiative is left to individuals to accept, refuse, or modify the proposed changes. Here it is the rationality and the acceptability of the innovation itself which is the major factor rather than the authority of the person advocating the reform.

On the other hand, in systems which are highly centralised, innovation and invention are more often enforced through a hierarchical chain of command, with psychological and economic sanctions against those who resist. Such changes diffuse more rapidly throughout the entire system, but they are seldom internalised by the adopters unless they are practised long enough to change habits and patterns of behaviour.

Thus, there exists a paradox. In the management and manipulation of innovation and change, by involving the adopter we are forced to modify or decelerate the original project – a situation which most technical experts, planners or senior administrators find unacceptable. Any given innovation, however, which contradicts the existing values or the past experiences of the adopters, or which is not in keeping with the structural properties of the target institution, has very little chance of success. Here one faces the crucial difference between changing things and changing persons – and it is perhaps somewhat unlikely that precisely the same procedures will be suitable for both.

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Unwin Education Books

BOOKS

Aspects of Educational Change

In a time of global unrest and social rupture the teacher is currently experiencing a whole range of innovations, ideas, changes, in curricular content and methods, and a great variety of propositions for modifying the institution of the school and even for 'deschooling' society. All these tend to leave him somewhat bemused and mystified. He has come to realise, however, that change itself has become a permanent factor on the educational scene and, therefore, its operation or mechanism must not just be accepted, or even rejected out of hand, but above all understood.

The aim of this book is to present to the reader an approach towards some real understanding of these changes and innovations. A number of mechanisms and processes are discussed and analysed in an attempt to present some sort of overview of the agents involved in change, an analysis of the major characteristics of resisters and innovators, an account of the traits and functions of innovative institutions and a description of three particular models which delineate the way in which change occurs. In the final section of the text a brief look is given to some current educational innovations, and some suggestions provided for dealing with problems involved in their evaluation.

Whilst the book has particularly in mind students in colleges and departments of education, it should prove to be of vital interest to practising teachers who really want to get to grips with the innovations they are asked by others to implement. Ivor Morrish has been involved with the changing scene in schools and in teacher education for many years, and is the author of several books including *Education Since 1800*, *The Background of Immigrant Children* and *The Sociology of Education*.

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